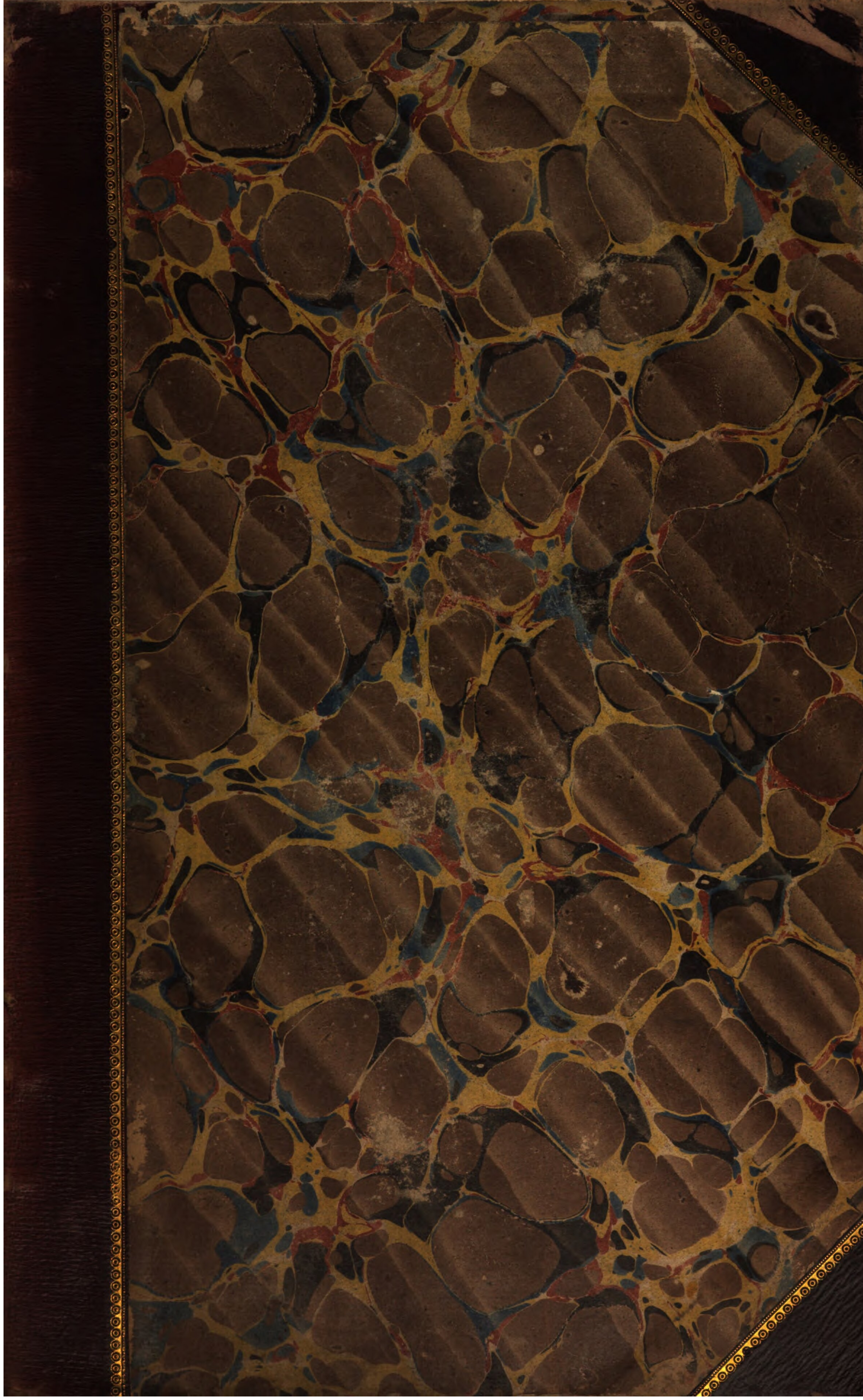
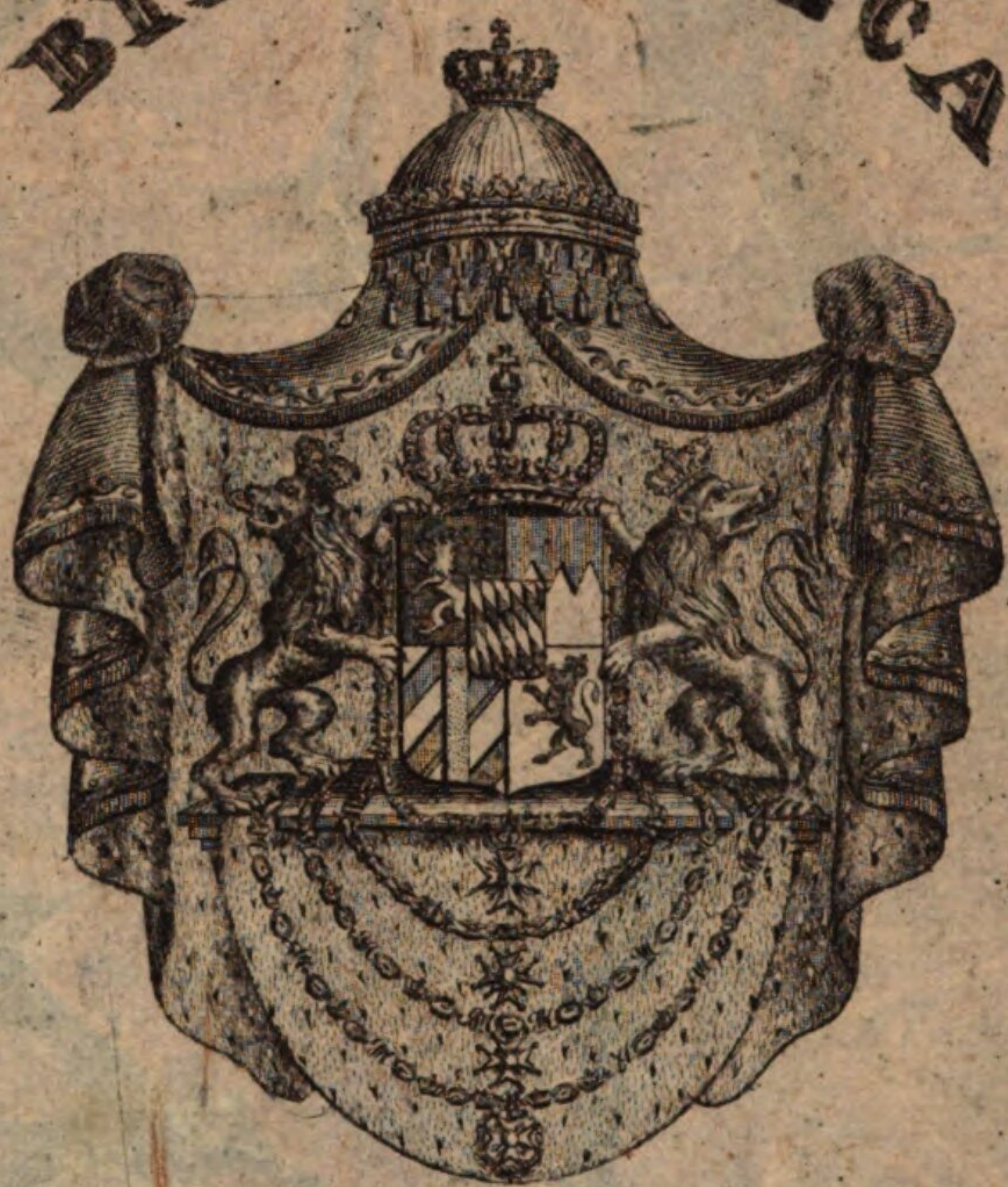
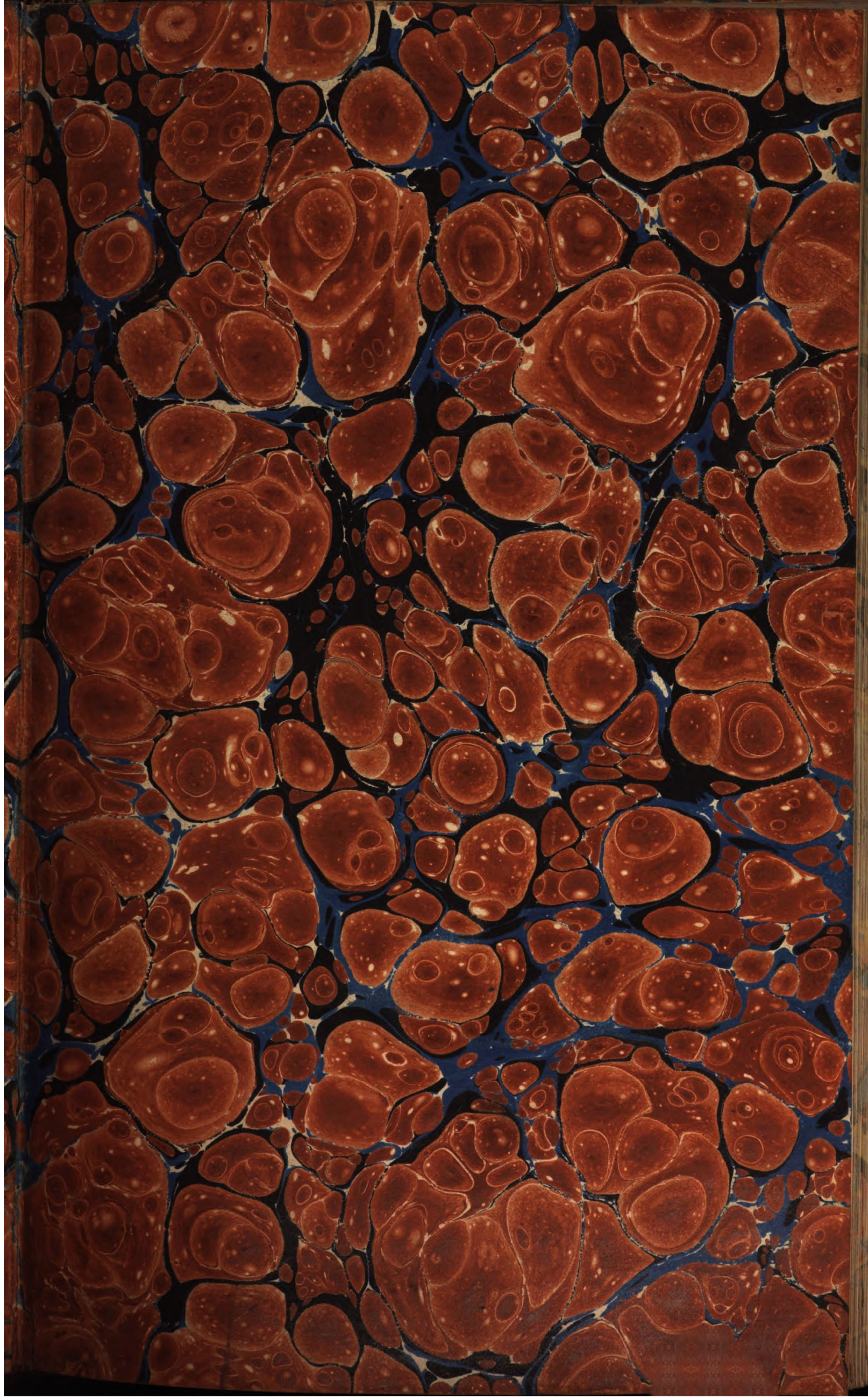




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REPORT

REPORTS AND PAPERS

OF THE

SELECTION
OF
REPORTS AND PAPERS
OF THE
HOUSE OF COMMONS.

VOL. 45.

Poor in Ireland.

1836.

SECTION

REPORTS AND PAPERS

OF THE

HOUSE OF COMMONS

Vol. 46

1881

1881

Contents of Vol. 45.

Ms. Paging

314. Report from the Select Committee on the Condition
of the Poor in Ireland (1819) ——— 1

409. Second Report from the Select Committee on the Condition
of the Poor in Ireland (1819) ——— 93

561. Report from the Select Committee on the Employment
of the Poor in Ireland (1823) ——— 265

Contents of the 1st

1. Report from the Joint Committee on the Judiciary

of the 1st Session, 1877

2. Report from the Joint Committee on the Judiciary

of the 2nd Session, 1877

3. Report from the Joint Committee on the Judiciary

of the 3rd Session, 1877

F I R S T
R E P O R T

FROM THE

SELECT COMMITTEE

On the State of Disease, and Condition of the
Labouring Poor, in Ireland.

Ordered, by The House of Commons, to be Printed,

17 May 1819.

THE REPORT - - - - - p. 3.

THE APPENDIX;—Viz. Medical Inspections of the Provinces of
MUNSTER, CONAUGHT, ULSTER, and LEINSTER - - p. 9, &c.

R E P O R T.

THE SELECT COMMITTEE appointed to inquire into the State of *Ireland*, as to Disease, and how far the Measures, remedial and preventive, adopted by the Legislature or otherwise during the last year, have been effective for its removal or mitigation; and also into the Condition of the Labouring Poor of that part of the United Kingdom, with a view to facilitate the application of the Funds of private Individuals and Associations, for their Employment in useful and productive Labour; and to report their Observations, together with their Opinion on these Subjects, from time to time to The House;—HAVE, pursuant to the Order of The House, examined the matters to them referred, and have agreed to the following REPORT:

YOUR Committee have, in compliance with the order of reference, directed their attention, in the first place, to the examination of the actual state of Ireland as to Disease, and the effect of the Legislative provisions humanely enacted in the last Session of Parliament, for the removal or mitigation of that public calamity. They now proceed, under the power intrusted to them of reporting from time to time their opinion thereon, to state to the House the result of their inquiries into this the earliest, although perhaps not the most essential or most difficult object of their investigation.

The labours of Your Committee as to this branch of their inquiry, have been materially abridged and facilitated by the judicious measures adopted by the Irish government, for ascertaining, by accurate inspection, the actual state of those districts of the several provinces where this epidemic fever had most fatally prevailed; and they have been enabled, by the detailed reports of the respectable and intelligent members of the medical profession selected to perform this humane and valuable duty, to lay before the House more satisfactory information on this interesting subject than would probably have been attainable from any other sources. The liberality of the public had, in compliance with the recommendation of the Committee of the last Session, been continued and increased, in aid of the voluntary contributions for relief of the diseased, and it was

on every account most desirable that the Irish government who had thus dispensed the public bounty should be enabled to ascertain the effects, produced by the expenditure of the public and private funds for attainment of this great object under the provisions adopted by the legislature.

Your Committee therefore, have annexed these Returns of the medical Inspectors as an Appendix to this Report ; which with the tables accompanying them, will, they are confident, receive from the House that serious and considerate attention, which such documents so well deserve ; and they venture to add that without a careful perusal of them, a very inadequate opinion will be formed of the extent of the calamitous pressure on the body of the people, and the great sacrifices and meritorious exertions of the residents of all classes for relief of the diseased. The reports on the provinces of Munster and Leinster, and particularly the cities of Dublin, Cork, Waterford, and Limerick, where the disease prevailed most extensively, and where the more general establishment of fever hospitals has afforded the means of more correct information, appear best suited to elucidate this interesting subject of inquiry.

The Committee consider the Act of last Session as only in the commencement of its operation, and cannot feel any surprize if a course of legislative regulations, in some parts novel, and enacted under circumstances of severe and calamitous visitation, has in some instances, and especially where imperfectly acted upon, failed to produce an immediate effect, or should have been sometimes misconceived, as to its tendency and the nature of its provisions : in this latter observation they particularly refer to the enactments respecting the establishment of a Board of Health, which, though guarded most scrupulously against any possible abuse of those great powers which could alone be efficacious in such extensive cases as it was calculated to meet, appear to have excited, in some parts, unmerited distrust and jealousy ; whilst they have been acted upon in other places, Newry in particular, where they are stated to have produced the most salutary results.

Your Committee, however, consider themselves warranted in expressing a sincere and satisfactory conviction that the Act has been signally and powerfully effective in the attainment of its objects through many extensive districts of a country severely afflicted with disease : The remedial means pointed out by the Act, where fully adopted, have worked extensive good ; and as they trust they will be still more powerfully efficacious as they are more generally acted on, Your Committee considers itself in a great degree released from further immediate consideration of that branch of the subject.

The Reports of all the Inspectors, and accurate information derived from other most respectable individuals, concur in the necessity of looking to the establishment of measures for the prevention of disease, and to securing the people of Ireland against its recurrence and increase, by assiduous and regular attention to cleanliness of the streets of the cities and

and great towns, and ventilation and purification of the dwellings of the Inhabitants.

In this view Your Committee consider it of infinite moment that the necessity of local systematic and unpaid control should be impressed on the Inhabitants of all cities and great towns, where the assemblage of large bodies of people creates those nuisances which generate and increase disease; and have therefore sought out the means of calling into action parochial assistance in performance of those duties, as best suited to the object; being well satisfied, that appointments of that nature induce the most salutary and efficacious results of individual and collective exertion; in no case can we look to this exertion with more confidence, than when the health and comforts of the community are in question; nor at any time, than when that community having severely felt, and still continuing to feel, though in a lesser degree, the fatal consequences of past negligence, or the want of such provision, by the visitation of disease, will be disposed duly to estimate the value of such a regularly acting and established system. Under such circumstances, Your Committee venture, with some degree of confidence, to recommend certain Legislative Regulations, directed to this important object.

They have also adopted, but with some doubt as to its efficacious practical results, a suggestion, intended to prevent the migration through the country of numerous bodies of mendicant poor, who, pressed by distress and seeking for relief, have fatally contributed to the general diffusion of disease. For this evil, to which the concurring medical Reports of the last and present year mainly attribute the extension of the disorder, it is most difficult to devise a remedy, which will not lead, in its consequences, to the establishment of a system of Poor Laws, that, in a country like Ireland, would produce incalculable evils to every class of the community.

The measure which Your Committee proposes, merely goes to confirm powers in the Magistracy which formerly existed, and to extend them to some other officers; but to render the pecuniary provision for the expenses incurred in their execution entirely dependent on the voluntary Contributions of Individuals, or local Public Communities.

Your Committee now proceed to lay before the House in detail, the Regulations, which they feel it their duty to recommend for the purposes aforesaid.

1. That in order to provide for and secure constant and adequate attention to the health and comforts of the Inhabitants of Ireland, and the prevention of contagious disease, more especially in the cities and great towns thereof, it appears requisite, that Officers should be annually elected by the Householders in all cities and great towns, containing above one thousand Inhabitants, and in such of the Parishes of the country as may think proper to adopt a similar measure; which officers shall be, during the year of their continuance in office, intrusted

with full powers to direct all streets and lanes, and yards adjoining thereto, and houses let in several tenements to room-keepers, and the yards connected therewith, to be cleansed, and all nuisances prejudicial to health to be removed therefrom, and to clear public sewers, and cover them where necessary, and to fill up or drain off all lodgments of standing water, and to cause to be done such works for ventilation and fumigation and cleansing of any house in which fever has occurred, and the washing and purifying the persons and clothes of its Inhabitants, as shall appear to them indispensably necessary for the preservation and security of the inhabitants of the parish; and that in all cities and great towns, as above mentioned, where the inhabitant householders shall neglect or omit to make such appointments for one month after the 25th of March in every year, it shall be competent for the Magistrates assembled in Quarter Sessions to make such appointment: and that all constables and other peace officers be empowered and required to be assistant to the said Officers of Health, when called upon in execution of their duty.

2. That such Officers of Health should be chosen in vestries parochially in all cities and great towns, and also in such country parishes as shall think it proper to adopt this measure, to the number of not less than two, or more than five for each parish, and shall act without salary; and that the expenses incurred in discharge of their duties enjoined by these Resolutions, the amount whereof shall not exceed such sum as the inhabitant householders shall, at the appointment of such officers, limit and direct, be levied by parish rate in such manner and form as the other parochial assessments are; and the expenditure accounted for in a similar manner; but at such periods of the year, and as often as the parochial meeting shall direct, by the said Officers of Health; and that copies of such accounts be transmitted annually to such public office or officer in Dublin as the Lord Lieutenant shall direct.

3. That in all cities and towns as aforesaid, where the sweeping of the streets and dung collected there is not already vested, or by any Act shall be vested in the corporate body, or where the scavengers or other persons intrusted by such corporate body with the care thereof, shall neglect or omit to exercise the powers intrusted to them, by cleansing the streets and lanes twice in every week at the least, after notice given of such neglect or omission by any inhabitant to the scavengers or other persons so intrusted, the dung and sweepings of the streets may and shall, in 24 hours after, be collected and sold by the said Officers of Health for the benefit of such parish, and accounted for in diminution of the charge incurred in execution of their several powers.

4. That any magistrate or churchwarden, or any of the officers so to be appointed, be empowered to remove out of their respective parishes any persons who shall be found begging or wandering as vagabonds therein, or to confine such persons to hard labour for 24 hours in any bridewell, or other public place of confinement, or to adopt both measures, as the case may require; and to cause the persons and clothes of such vagabond

bond beggars to be washed and cleansed during the period of their confinement ; and that the magistrates assembled at any quarter sessions, or adjournment thereof, be empowered to constitute any suitable unoccupied building to be a bridewell for the said purposes ; provided that it be so appropriated and continued with the consent of the owner or proprietor thereof ; and that it be earnestly recommended, that wherever public buildings exist, which are no longer necessary to be applied to the original object of their destination, they may be allowed to be used for the purposes aforesaid.

Your Committee having thus submitted their general view of this branch of the subject intrusted to them, and embodied the results in the foregoing Regulations, are proceeding, in farther execution of their duty, to inquire how far it may be practicable to ameliorate the condition of the Labouring Poor, by facilitating the application of the Funds of private individuals and associations, for their employment in useful and productive labour ; by which alone Your Committee feel themselves warranted to expect the entire and permanent removal of a malady, which, although much mitigated in its severity, and more circumscribed in its extent, still continues to press heavily on the community, and which the united testimonies of every competent inquirer attribute to the want of employment of the labouring classes, as a primary and powerfully efficient cause.

17 May 1819.

LIST OF APPENDIX.

- I.—Medical Inspection of the Province of MUNSTER, during the months of
February and March 1819:—By Dr. *Francis Barker* - - - p. 9.
- II.—D° - - - D° - - - CONAUGHT;—By Dr. *John Crampton* - p. 41.
- III.—D° - - - D° - - - ULSTER;—By Dr. *James Clarke* - - - p. 59.
- IV.—D° - - - D° - - - LEINSTER:—By Dr. *J. Cheyne* - - - p. 69.

A P P E N D I X.

— I. —

A REPORT ON THE STATE OF FEVER IN THE
PROVINCE OF MUNSTER.

THE insertion of the following letter, received from Mr. Secretary *Grant* on the 13th of February last, appears to me requisite to explain the objects of my mission, and the means which I have adopted to fulfil its several duties.

Dublin Castle, 12th February 1819.

HIS Excellency the Lord Lieutenant having been pleased to appoint Doctor Francis Barker, as a temporary medical inspector for the province of Munster, for the purpose of ascertaining, by inquiry to be made by him on the spot, the exact state of Fever throughout the province, with the view of submitting in detail for His Excellency's consideration, such medical or preventive measures, (in addition to those now employed,) as might in his judgment prove the means, not only of relieving the persons afflicted with contagious fever, but of checking its further progress in their several dwellings; I have to communicate His Excellency's anxious desire and confident expectation, that magistrates of every class, the clergy of all persuasions, and the several respectable persons who superintend and execute the arduous and useful duties of governors and medical attendants on the fever hospitals and dispensaries which have been established throughout the province of Munster, will be pleased to afford their best advice and assistance to Doctor Barker, for the purpose of enabling him to discharge the important trust committed into his hands, with benefit to the country at large.

(Signed) *Charles Grant.*

HAVING received the commands of His Excellency the Lord Lieutenant, to act as a temporary medical inspector for the province of Munster, I proceeded, conformably with my instructions, to ascertain by inquiry made on the spot, the exact state of fever throughout five counties of that province; and I now submit for His Excellency's consideration the several results of my inspection, together with such medical and preventive measures, (in addition to those now employed), as may in my judgment prove the means, not only of relieving the persons afflicted with contagious fever, but of checking its further progress in their several dwellings.

I.
MUNSTER.

To discharge this important trust, I addressed myself to those gentlemen who, from official situation as magistrates or clergymen, or from connection with various fever hospitals or dispensaries, were likely to afford accurate and satisfactory information; and the substance of the following Report has been framed from a comparison of the separate statements of numerous individuals in the same or in different parts of the province; from visits to the different establishments receiving patients in fever, and in almost every instance from personal communications, carefully noted down at the time. The several inspectors employed on this occasion, had judged it expedient, previous to their setting out on their mission, to decide upon and methodize the different subjects connected with this inquiry. These have been arranged under the following heads, in the form of Queries, and in the order which I propose to observe in this report.

1.—HAS Fever prevailed in does it now prevail; and is it increasing, stationary, or decreasing?

2.—Is there any district in this neighbourhood where it has not prevailed, or any class of people among whom it has not showed itself; and if so, what peculiarities in their habits or modes of living have been observed.

3.—WHEN did this epidemic fever first appear? at what time was it most prevalent and fatal; and what proportion does the number of those who have been attacked, bear to the whole population?

4.—WERE any remarkable circumstances observable in the state of the people in this place, when fever first made its appearance among them?

5.—DOES it differ from the ordinary fever of this country, and has any change in its character taken place; and if so, at what time?

6.—WHAT means have been employed to counteract it, and with what success? are there any districts in this neighbourhood unprovided with medical aid?

7.—WERE relapses frequent; and if so, during what times since the commencement of the epidemic? did the disease often recur in the same individual at distant periods; and if so, from what causes.

8.—WHAT effects did it produce on the constitutions of the sufferers?

9.—HAS it extended through families; or from the sick, to the medical or other visitors or attendants.

10.—CAN accurate returns, in periods of twelve or six months, or monthly, of the numbers admitted, cured, and died in hospitals, or of those who sickened and passed through the disease in their own houses, be supplied?

THE Facts resulting from Answers given to the preceding Questions, together with such collateral information as appeared to be connected with the subject, are stated for the different counties in this order:—Waterford, Cork, Kerry, Limerick, and Tipperary; and this division has been adopted because the soil and situation of the different counties, and the habits and circumstances of their inhabitants are so distinct, that such varieties of the epidemic fever might be expected to exist, as would, on comparison, afford information as to the progress of disease, and the means best adapted for its prevention.

*County of Waterford.*I.
MUNSTER.County of
Waterford.

IN the county of Waterford, various places were inspected, particularly those where fever had been most prevalent, including Waterford, Dungarvan, Cappoquin, Lismore, Tallow; where, from the establishment of fever hospitals, most information was likely to be obtained. Various particulars were also learned as to the state of fever in Kilmacthomas, Tramore, and other small towns situated on the adjacent sea coast.

1.—IN Waterford, fever had for some time prevailed in a very considerable degree, and at the period of my visit seemed to be increasing; but this apparent increase was attributed by most well informed persons to an active inspection of the city, lately instituted by the medical gentlemen, with other benevolent individuals, and consequent reception into the hospital of many patients in fever, who but for the visits of the inspectors, would have remained in their own dwellings.

The hospital was crowded in an extreme degree; and it had been just resolved to extend the accommodation, and to appropriate some of the wards in the contiguous city hospital to the reception of fever patients. The great prevalence of fever at this period will become evident on inspecting the return No. 1. from which it will appear that the number of patients in hospital on the 20th of last February exceeded more than four times the number at the latter part of 1817. It is satisfactory to state, from information lately received, that the disease has now considerably decreased in Waterford, and that the patients admitted to the hospital during the last week of March did not in number much exceed one-third of those admitted during the same period, at the commencement of last January.

2.—IN some of the smaller towns contiguous to Waterford, fever had also prevailed, but as I was credibly informed, it was on the decline; and in Tramore and its vicinity, which had also been visited by this malady, there was not a single case of fever at that time.

This epidemic fever seemed to have first showed itself at Passage, a small seaport town near to the mouth of the river Suir, about the end of the year 1816, or the beginning of 1817. In the month of February of the latter year, it was very prevalent in that town; and little doubt can exist of its prevalence in this quarter, and at Waterford, before it made its appearance in more inland places situated to the west of this city.

From the reports of fourteen medical gentlemen, and other well informed persons, it was satisfactorily proved that fever had prevailed in every district around the city, and that no class of people had been altogether exempt from its attacks, although its prevalence had been much greater in the lower than the upper classes of society, among whom at that time no case of fever was known to exist, although about twelve months previously, and during last summer, it had appeared occasionally, and as in most other places where it attacked the rich, had been attended with consequences proportionally much more fatal. By the returns of the fever hospital at Waterford, it is proved, that during the months of December, January and February last, little more than one in sixteen had died of fever; but among the better ranks in that town and its neighbourhood, the fatal cases had constituted at least one-fourth of the total number attacked. The infrequency of fever here observed among the class of society in comfortable circumstances, is attributable to the superior cleanliness and ventilation of their dwellings, their more frequent ablutions and changes of apparel, and seclusion from those by whom infection is most frequently communicated. Little or no fever had appeared among the society of Quakers, probably from the same causes, operating in a higher degree. That seclusion exerts a strong preservative influence, was exemplified by facts derived from unquestionable authority. In the charity school of Killoteran, about three miles distant from Waterford, containing fifty-six boys, no case of fever had occurred, either during the last summer or since that time, when the disease was so prevalent in Waterford and the immediate vicinity of the school. The master had received particular directions to prevent all communication with the town or surrounding neighbourhood; these directions had been carefully observed. A fact of a different kind, by showing that comfortable circumstances and cleanly habits are alone insufficient to confer security, without a certain degree of seclusion, tends

I.
MUNSTER.

tends to confirm its preventive efficacy: many of the inferior classes, such as farmers, and others, whose circumstances were tolerably comfortable, and habits cleanly, suffered considerably from fever, arising most probably from their more frequent and continued intercourse with persons in the lowest rank, amongst whom it was chiefly prevalent.

3.—JUDGING from the annexed return of the fever hospital, we might be led to infer, that fever had begun to prevail epidemically in Waterford during the summer of 1817, as its chief increase was manifested at that season; but the concurring reports of various medical gentlemen, referred its commencement to the end of 1816, or January 1817. From that time it had advanced progressively; and had been most prevalent and fatal at the period of my inspection, and during some months antecedently.

To ascertain precisely the proportion which the number seized with fever, bore to the whole population of Waterford, was scarcely possible, as many persons were received into hospital from the adjacent country, and many also must have remained in their homes unnoticed; but supposing the number of such patients to be nearly equal, estimating from a comparison of the returns of the fever hospital and the total number of inhabitants, the sufferers from fever cannot be rated at less than one-ninth of the whole population. In a part of the city named the Carrigeen, inhabited by the poorest and most miserable classes, there are good reasons for believing that nineteen persons in twenty at least have suffered from fever; and in Murphy's-lane, containing sixty houses, every inhabitant has had an attack of fever within the last two months.

4.—THE circumstances of the people at the time of its first invasion, were in many respects peculiar: poverty was extreme; in consequence of the failure of the crops in the year 1816, scarcity had prevailed to a degree almost amounting to famine; the seasons were most unusually humid. With these evils, want of employment, arising from the change from war to peace, and the failure or deficiency of manufactures, contributed in a high degree to increase the distress. The manufacture of stuff, which formerly was pretty extensive, has of late years greatly declined. One of the inspectors of the convalescent committee had very lately visited many of the weavers rooms, in all of which he had found but one loom at work.

The slaughtering of beef, from which the poor inhabitants derived some assistance, has also ceased. The miserable consequences thus arising from the concurrence of scarcity with want of employment, far exceeded all former example; for, in the year 1801, scarcity alone operated to produce distress. A physician to the public establishments in this city, informed me that he has frequently detected healthy men endeavouring to alleviate the pains of starving by lying in bed during the greater part of the day, in a state of reckless despondency.

The great neglect of cleanliness among the lower classes, a necessary consequence of extreme poverty, was stated also as a powerful cause for the spreading of febrile contagion.

5.—It may be proper to mention, that the fever did not materially differ from the ordinary kind which so generally prevails in Ireland. In the course of last autumn it was attended by dysentery, which proved remarkably fatal to the inhabitants of this city; three hundred persons, including some of the better ranks, having probably become its victims.

6.—IN Waterford, which in this country first set the example of instituting an hospital for the reception of fever patients exclusively, in connection with other parts of the preventive system, it might be expected, from the humane activity of its managers, that extraordinary efforts would have been employed to oppose the progress of disease: the sick were removed from their dwellings to hospital; the rooms whitewashed, and clean straw supplied to the remaining family; and as ventilation was in many instances found to be defective, in some houses of the densely populous lanes, openings were made, when it could be done, to admit fresh air and diminish the noxious effects of the concentrated effluvia: the articles of dress made of linen, belonging to patients admitted to the hospital, were washed and exposed to the fresh air; private contributions for the support of the hospital, were most liberal, and aid was obtained from government by the advance of different

sums

I.
MUNSTER.*Beneficial effect of
a Fund established
at Waterford.*

sums on several occasions : but as these exertions, though great and unprecedented, proved ineffectual completely to arrest the progress of disease, additional measures were employed, which deserve attention. A Fund was established for the purpose of affording relief to the families of all persons received into the fever hospital, and nourishment to the convalescents from fever on their return to their dwellings ; and also for cleansing the houses and clothes of the infected : a commodious house (the gift of a member of the corporation) has been fitted up with cisterns and boilers for washing, and a kiln for drying and fumigating the infected clothes and bedding : children left destitute by the removal of their parents to the hospital, or those who have not changes of clothes, are received into the house to undergo the operation of cleansing : notice is received there of all fresh cases of apparent fever, and lists are sent every morning from the fever hospital, of the persons admitted or dismissed on the preceding day : the city has been divided into districts, to each of which a physician and three other visitors, members of the committee, are allotted. The physician examines the applications of the sick to this house, visits the applicants, and should he find it necessary, sends them to the fever hospital : the other members of the district committees visit the patients dwellings, and see that all the measures of purification, consisting of whitewashing, burning foul, and supplying new straw, and cleansing the person and bedding of the infected families, have been duly performed ; soup and fuel are also distributed to poor families when in a state of convalescence, as circumstances may require : but the success of the plan has not yet been decisive, though no doubt can exist that distress must have been greatly alleviated, and much sickness prevented by its humane operation.

The districts around Waterford, in the county, are in general unprovided with medical aid, except such as can be obtained from the city, with the exception of Tramore, where a physician resides.

7.—THE distress arising from this epidemic fever, has been much increased by the frequency of relapses, which have happened chiefly within the last four months : of 2,700 patients admitted to the hospital in the year 1818, 700 at least were either cases of relapse, or of a recurrence of the disease after some interval of time. Many patients relapsed several times, and such attacks were often severe ; they were attributed to want of wholesome nourishing food, and of clothing and bedding, and to the neglect of cleanliness in the persons and apartments of the poor. It was reported that relapses were not so frequent in some parts of the country adjacent to the sea coast, as they had been in Waterford.

8.—No extraordinary effects on the constitution, with the exception of debility, seemed to follow the attacks of fever ; and this, as might be expected, was most remarkable after relapses.

9.—AMONG the poorer classes, living in apartments crowded and ill ventilated during the whole night and great part of the day, and thus exposed to the effluvia proceeding from the sick, the disease has been observed very generally to extend to all the individuals of a family ; seven or eight persons from the same rooms have frequently been admitted in succession to the hospital ; but in the upper classes of society, such extension of fever through the members of a family was rarely observed. The circumstances of the rich will account for this immunity : their apartments are better ventilated than those of the inferior classes ; and they are not, as the poor, exposed during the night, when the system is probably most susceptible of the influence of contagion, to its impression, continued during many hours, in small rooms ill ventilated, and favouring its propagation by neglect of every kind. Cleanliness in the persons and apartments of the richer classes, also contributes to their security ; nor should we omit the superior dryness of their dwellings, as there is some reason for supposing that damp air acts as a vehicle of contagion ; it is also probable that the more liberal use of animal food among the richer classes, by invigorating the system, may contribute to their security. On these principles may be explained the fact, that the troops in the garrison of Waterford have been healthy when fever raged in that town and its vicinity ; and that ninety non-commissioned officers of the Waterford militia staff have suffered but little from fever during the last three years, though following their trades in different parts of the city. Of the medical attendants, not one in this city has suffered from this disease, though engaged occasionally in attendance on the fever hospital ; two of them had a severe attack of dysentery, a disease, by some physicians, considered to be closely allied to fever.

I.
MUNSTER.

The housekeeper, nurse-tenders, and servants at this hospital have suffered severely, few having escaped the sickness, particularly during the last summer; and in two instances the termination was fatal: seventeen have been attacked within the last fourteen months; and of these, four have suffered two or three relapses. Here it would be injustice to pass over unnoticed the fearless intrepidity displayed by the members of the committee and medical gentlemen in their attendance on the hospital, which, at the time of my inspection, was so crowded, that in some of the wards the patients lay in three rows, and many of the beds contained two patients labouring under fever. In these circumstances the physicians continued their daily visits; and gentlemen of the town, managers of the institution, did not hesitate to enter wards which, accustomed as I am to attendance on fever patients, I could not remain in without some feelings of apprehension. This generous sacrifice of their personal safety is no longer necessary; more ample accommodation having been since that time provided. The extension of fever among the attendants at fever hospitals, will in the sequel appear to have been an almost universal occurrence in this part of Ireland. The return (No. 1) from the hospital, will show the progress of fever in Waterford, and the magnitude of those exertions which have been made for its suppression: but it is proper to observe, that the great assistance rendered by the "Convalescent Committee" to the families of patients, when received into hospital, has lately contributed to crowd its wards with cases of a slight nature, and to interfere with an exact comparison of this with other parts of the province, where less active measures have been employed or deemed to be necessary.

1.—IN other parts of the county, including Dungarvan, Cappoquin, Lismore, Tallow and Kilmacthomas, fever seemed to be much less prevalent than in Waterford; and although in these places there had been an evident decrease, which seemed more permanent than on former occasions, still the disease did not appear altogether subdued. It had occurred in most districts within some miles around the above mentioned towns, but at different times. Thus in the parish of Rineogonah, the inhabitants had no fever when it raged in Dungarvan, though the malady has since reached them.

2.—INSTANCES of exemption, worthy of remark, also occurred. Thus it did not prevail at Ballinavella, Kilnacaraga, and the two Bridanes, plough lands in the neighbourhood of Lismore, owing, as it is stated, to advice given by the roman catholic clergyman to the inhabitants of these places not to frequent Lismore or Tallow. Its attacks, as in Waterford and the immediate neighbourhood of that city, had not been confined to the lower classes, although crowding of apartments, defective ventilation, neglect of cleanliness, and the other consequences of poverty, were found to be as effectual here as in Waterford, in favouring its progress. At Cappoquin, fever was stated to have begun with the better ranks, and proceeded from them to the poor.

3.—THE first increase of fever in Lismore, took place about November 1817, and it was most fatal in last September and October. It had appeared at Ballyduff on the south side of the river Blackwater, about twelve months ago: a person resident there, who died of fever, had bequeathed his clothes to an inhabitant of the opposite side of the river; and soon after this event, the disease spread through the family into which the clothes had been received. Here it proved more fatal at its first appearance than subsequently, and continued, from its commencement at Ballyduff, during eight or nine months at both sides of the Blackwater.

4.—DEFICIENCY of fuel, arising from the wetness of the years 1816, 1817, was frequently assigned to me as a cause for the spreading of fever amongst the poor at that time. Turf or peat, the ordinary fuel in most inland parts of the country, could not be dried and brought home in a state fit for use: this must have occasioned a perpetual dampness of the clothing and apartments of the poor, debilitating their constitution, rendering the air of their dwellings more noxious by diminished ventilation, arising from the want of a fire burning within the flue; thus in various ways favouring the influence of contagion.

Poverty and its consequences in this, as in other parts of the county of Waterford, attended the commencement of fever; and the distresses of the poor have been much increased by the failure of the fishery, which occurred about the time when the disease

disease became epidemical, at Dungarvan and other parts of the adjacent sea coast. At this period, several of the fishermen had become beggars.

Strangers were supposed to have introduced the disease into Tallow, as they resorted there in great numbers at the time when fever commenced. It is supposed that one-third part of the population of that town, suffered in some degree from fever.

5.—THE progress of fever in this part of the county of Waterford, resembled that of the city and its vicinity. It had in general become milder, and also of shorter continuance; a strong indication of diminished severity, though not of lessened contagion.

6.—THE preventive means used in this quarter of the county, were similar to those already stated. Temporary fever hospitals had been erected, supported by private and public contribution, also by aid from government, and exertions great and generous were employed to prevent the extension of disease. A measure of relief pursued at Cappoquin, deserves mention: the distribution of clothes, in cases of great distress, by a charitable society instituted for that purpose; the miserable condition of the poor rendering such relief peculiarly necessary, and obviating a frequent cause of fever. The benefit of such societies is not limited to the relief they afford; they disclose the condition and wants of the poor to the upper classes; and thus approximating the different orders of society, tend to give them a community of interest and feeling.

7.—RELAPSES were very frequent in every quarter of the county of Waterford, and greatly augmented the distress.

8.—No peculiar effects on the constitution, were observed to result from its attacks.

9.—ITS contagious nature was more strongly evinced in this, than in the eastern part of the county; for it not only spread through whole families, but several clergymen, both protestant and roman catholic, and some physicians, were attacked. In the hospital at Lismore, every nurse-tender had suffered, and some of them gave up their places from apprehension. The physician was also a sufferer; and some of the clergy, protestant and roman catholic, in the neighbourhood of Tallow, died of fever.

From a review of the different reports obtained in this county, it results that fever, with scarcely an exception, has prevailed in every district, commencing not exactly at the same time in different places, but at a period generally corresponding with the distresses arising from the scarcity: *Observations.*

That in this county it is by no means subdued, although its frequency has been progressively diminishing, and its severity is in general mitigated:

That the evils resulting from it, have been greatly enhanced by relapses:

That its contagious nature has been strongly evinced by its almost universal extension among the nurse-tenders in hospitals, and the attacks of fever which have occurred among the physicians and clergy engaged in the duty of attendance on the sick:

That the preventive system, in all its details, is now very actively pursued in the town of Waterford, where the disease still appears to be prevalent to a greater degree than in other parts of the county. *Preventive System.*

County of Cork.

IN the county of Cork, such places were inspected as were judged likely to afford satisfactory information relative to the prevalence and character of the epidemic fever, and the means which had been adopted to restrain its progress. *County of Cork.*

The great extent of this county, and the sufferings which its inhabitants have undergone, claim for it peculiar notice; but to avoid useless repetition, reference will occasionally be made to the statements contained in the report on the county of Waterford.

1.—FROM the low and damp situation of Cork, and the injury which its dense population must have sustained by the change from war to peace, it might be expected

I.
MUNSTER.

expected that epidemic fever would there have made great progress, more especially when rendered active by bad seasons, giving rise to scarcity amounting almost to famine; accordingly fever has prevailed to a most extraordinary extent. The number of patients who passed through the fever hospitals in the year 1815, amounted to 726; in 1816, these rose to 995; in 1817, to 4,617; and in 1818, to the enormous amount of 10,228: so that in the two last years, a number of patients exceeding one-seventh of the population of Cork, estimating this at 100,000, has passed through the different fever hospitals of that city. Such was the increase of fever patients in the year 1817 and part of 1818, that two additional hospitals were required to accommodate all the applicants labouring under fever: these hospitals have since been closed; the last of them at the period of my inspection, on the 1st of March 1819.

It is most satisfactory to report from various concurring testimonies, as well as from returns obtained from the hospitals, that fever has so much declined in Cork, as to render it questionable if the disease be now more prevalent than it has been in ordinary times; no doubt however can exist that fever still prevails in Cork, but probably in a degree little exceeding its usual frequency in the populous towns of this county; and its progressive decrease, as indicated by reports from the hospitals, is universally acknowledged.

2.—It would seem to have prevailed in Cove, a small sea-port town near the mouth of the harbour, and seven miles distant from Cork, at an earlier period than in this city; and it deserves remark, that in two places so similarly circumstanced as Cove, and Passage near to Waterford, fever should have made its appearance at an earlier date than in either of these cities.

No district in the vicinage of Cork had been exempt from fever; and its progress seems to have been pretty similar to that observed in other places in this province, visiting the upper classes with great severity, and at its commencement proving very mortal, but almost totally ceasing among them in proportion as its frequency increased among the poor.

3.—Its commencement was generally referred to the latter part of 1816, or beginning of 1817. It increased manifestly in the spring of 1817; when the beds, which had been hitherto sufficient for the fever patients of the town, were found unequal to the demand, and a greater number were provided.

4.—GREAT scarcity and bad quality of provisions; increase of failures in trade, owing to the transition from war to peace; mendicants flocking to the city, and the needy in general crowding thither in search of employment, were the awful circumstances marking this eventful period.

5.—DYSENTERY, which showed itself in the course of last autumn, did not appear to have been so prevalent or fatal here as in Waterford, and the fever had changed its character and become milder.

6.—THE preventive means were pursued most actively: patients were received into hospitals, where every advantage to be derived from such establishments was obtainable; whitewashing, ventilation and fumigation occasionally were employed in the dwellings of the poor; the clothes of the patients received into hospitals, were ventilated or steeped in cold water; the bedding and clothes of the family remaining at home were not washed, but clean straw was supplied, and the old straw bedding occasionally destroyed; coals were also given to some poor families; soup also had been distributed to aid the distressed, and promote the recovery of convalescent patients: fever has declined almost within its ordinary limits; and the benevolent promoters of the measures so actively pursued for its suppression, have the satisfaction of reflecting that their dearest relatives, friends and fellow citizens, are no longer threatened by the visitation of this awful calamity.

7.—RELAPSES occurred very frequently; at one hospital it appeared that a large proportion of the patients dismissed, returned in a relapse of fever. This took place during the summer months, and among the lower ranks almost exclusively.

8.—THE effects produced on the constitution of the sufferers from an attack of this disease, were not different from those observed in Waterford.

9.—ITS

9.—ITS extension through families was a very general occurrence among the poor, and was not very infrequent among those whose circumstances were comfortable, if cleanliness and ventilation had been neglected; but it rarely spread among the upper classes. Nine physicians, eight of them engaged in attendance on the poor in different establishments, were attacked, and of this number three died; these unhappy events occurred in the year 1817. Every medical person, including two apothecaries, connected with the South Fever Asylum, had an attack of fever; the apothecaries to such institutions were general sufferers: the nurse-tenders, who in the performance of their duty were greatly exposed to infection, also suffered; the greater number had attacks of fever, and some became its victims. Other persons engaged in various offices with the sick, the fumigators of the houses, and barbers of the hospitals, were attacked, and it was evident that persons occupied with attendance on the sick poor at that time, suffered in a degree of frequency much exceeding that observed in any other class of people not similarly exposed. The only cause to which this could be assigned, was the contagious nature of the malady; for in ventilation, cleanliness and general arrangements, the hospitals were not merely unexceptionable, but in many respects deserving of imitation in other places.

In several of the public establishments, the foundling hospital, depôt for convicts, and gaol, few or no cases of fever then existed.

In the latter place, five cases of fever had not occurred from the commencement of the year 1817 to last August: this was attributed, and apparently with good reason, to the practice which had been adopted, on the admission of the prisoners, of washing and cleansing their persons, substituting a clean gaol dress for their own clothes, which were exposed to heat in a stove or oven, steeping the bedding of all those who were unusually filthy in bleaching liquor, and lastly, exposure to the process of stoving. Two prisoners had died of dysentery, but none of fever.

The practice of supplying gaol dresses has been discontinued, and some prisoners have sickened with fever, and a few patients of this kind were in the hospital at the time of my visit. The gaol was crowded to a greater degree than usual, and it had generally contained between three and four hundred prisoners.

Strong facts were stated to me on the existence of various nuisances, some of which I witnessed; and I was informed by the best authority, that one place where a number of lanes intersect, was in such a state from disease and filth, that some of the physicians more than once declared it to be quite unsafe for them to visit there. Deposits of filth and putrifying animal substances are suffered to remain in the crowded parts of this city; and I was informed that the powers vested in magistrates as to nuisances were insufficient, as the dung is the property of those who collect it, and cannot be removed without a tedious law proceeding, which the proprietor by various contrivances can evade. This evil requires a remedy; for whatsoever opinion may be entertained as to the power of animal effluvia to generate fever, no doubt should exist that air tainted and impure, debilitates the human system and favours the progress of contagion; and this may contribute with other causes, at all times, to maintain fever in the large cities of this province, where such nuisances are too much neglected.

*Bad effects of
Nuisances.*

1.—IN other parts of the county of Cork, the progress of this epidemic fever was similar to that observed in the city. At Cove, which previous to this time had not produced four cases of fever annually in a population of about 7,000, the increase of disease had become so great that it was deemed advisable to fit up a number of huts for the reception of fever patients. It seemed here equally contagious as at Cork, spreading through families almost universally; and it was observed of one house, that every family that occupied it as a dwelling during two successive years was attacked with fever. It extended to the attendants at hospitals: a physician, one of the apothecaries, and some of the nurse-tenders, were seized with the disease, and one of the latter died. It may be right to mention that soldiers, ill of fever, are landed from the transports and received into the military hospital at this place, and that six patients in fever had been admitted from the transports within the last month. In this island fever has greatly abated, or is now very little prevalent.

In other places of this county, Kinsale, Bandon, Fermoy, Mallow, Mill-street, Castle Martyr, Middleton, and Youghal, its progress was very similar to that

I.
MUNSTER.

observed in Cork; commencing at various periods after the wet season of 1816, prevailing in every district around these places, chiefly among the lower classes, but not altogether limited to these, but occasionally visiting individuals in better circumstances; and in this class it prevailed most at its commencement, and with severity and danger proportioned to their elevation in society.

2.—According to several reports, situations damp and elevated seemed to favour its progress. Thus in a mountainous track near Rathcormuck and Watergrass Hill it was extremely prevalent: in one family eight persons were attacked, and of these four died. In the neighbourhood of Bandon also it was said to have prevailed with most frequency and severity in situations damp and mountainous. Here it may be remarked, that in some instances it appeared to have been less prevalent, and generally to have declined more rapidly in places where the subjacent rock consisted of limestone, than in those differently constituted. Thus in Copsetown, in the neighbourhood of Mallow, fever was reported to have been much less prevalent than in any other place in that neighbourhood: it is elevated and exposed, and built over limestone.

Judging from the accounts of different medical gentlemen, from hospital reports and inspection of the patients, I would infer, that in all the above mentioned places and surrounding districts fever had considerably declined; that the decrease for some time past has been progressive, and does not resemble those fluctuations which have occurred during its former course. At Mallow, Fermoy, Kinsale, Bandon, and Youghal, it might be said in general to have approached its ordinary limits; in other places it had almost totally disappeared: thus at Middleton the temporary fever hospital had been closed, and not a case of fever was said to exist within four miles of that town.

3.—As to the time of its first appearance in different parts of the county of Cork, this was referred, according to different testimonies,

In Bandon	-	-	-	-	to Spring 1816.
Fermoy	-	-	-	-	Uncertain.
Cork	-	-	-	-	Summer of 1816.
Cove	-	-	-	-	September 1816.
Cork	-	-	-	-	October 1816.
Mallow	-	-	-	-	October 1816.
Bandon	-	-	-	-	January or February 1817.
Youghal	-	-	-	-	Midsummer 1817.
Castle Martyr	-	-	-	-	Midsummer 1817.
Middleton	-	-	-	-	Beginning of 1817.
Cork	-	-	-	-	Spring of 1817.
Bandon	-	-	-	-	Spring of 1817.
Mills-street	-	-	-	-	Spring of 1817.
Kinsale	-	-	-	-	Later than other places.
Skibbereen	-	-	-	-	Spring of 1817.
Fermoy	-	-	-	-	Spring of 1818.

Now from a collation of these testimonies, if we reject those which appear to differ much from the rest, it will follow that fever began to prevail epidemically in the county of Cork early in the spring of 1817, or the winter of 1816—1817; and as to the variations which appear in the different statements here given, I would only observe, that it is difficult to fix exactly the time when a fever begins to spread epidemically in a country which is constantly infested with this disease; more especially in places where there are no fever hospitals, or records kept of the number of cases. At Youghal and Kinsale, somewhat similarly circumstanced, and places of little resort, it seems to have commenced later than in other parts of the county. A census of the population in Youghal was taken in March 1817, at which time it was found quite free from fever; but the commencement of epidemic fever seems evidently connected with the great movement which took place in the county on the first impressions arising from scarcity.

4.—THE circumstances of the people at its commencement were generally stated to be such as are already mentioned in the reports of Cork and Waterford. Scarcity of wholesome food, combined with want of employment, extreme poverty, and wretchedness, great despondency; and in towns, defective ventilation of dwellings,

lings, and general neglect of cleanliness, were almost universally assigned as the condition of the inhabitants of the county of Cork at this time. But a few years ago, the fishermen of the town of Kinsale were never known to become mendicants; now they are often reduced to this necessity: the fishery on this coast, as at Youghal and Dungarvan, has been less productive than formerly. In some places, toward the west side of the county, the influx of strangers and mendicants was more dwelt upon than in other parts: thus, at Mills-street, it was stated that crowds of half-starved wretches, joined by the idle and ill disposed, passed through the county, seizing on potatoes and meal; and such was the violence of their importunity for food, that the distribution of soup became almost a service of personal danger. The number of strangers and mendicants who resorted to the western parts of the county of Cork, bordering on the county of Kerry, was extreme. The Kerry labourers, and many of the people west of the town of Bandon, emigrate during the season of harvest, and their wives and children at these times generally become beggars. The increase of this evil must have been enormous at the time of scarcity, and amongst a people with whom emigration and mendicity are annual habits; and must have contributed powerfully to extend fever through a population unemployed, debilitated, despondent, and in every respect susceptible of impression from this calamity.

5.—THE disease was, in general, reported to be either similar to the ordinary fever of this country, or to be merely a variety of this disease, modified by the peculiar circumstances of the people at the time of its invasion. At Mallow, deaths in the hospital were occasioned chiefly by a disease allied to dysentery, which proved at least as mortal in this place among the poor as in Waterford.

6.—THE preventive means employed in the large towns were similar to those adopted in Cork. Hospitals were prepared on a scale accommodated to the size of the town and the means of its inhabitants: for their support, the contributions were in many instances large and generous, and the aid of government was occasionally given: places already built were often applied to the purpose; and in some instances, buildings of the rudest construction, with walls composed of turf-sods, were fitted up for the accommodation of the sick. Such was the conviction the poorer classes felt of the necessity of the separation of the sick from their families, that in some instances they erected huts by the sides of the fields, to which they removed those who sickened with fever; for the spreading of this disease was always apprehended, because it was an almost universal consequence of its appearance in a family.

7.—Relapses were frequent in every part of the county, without exception, but among the poor chiefly or exclusively; most commonly during the year 1818, and in proportion as the disease assumed a milder form.

8.—It extended through the families of the lower ranks very generally, as in other places. This was the invariable report at Youghal, Castle Martyr, Middleton, Bandon, Kinsale, Fermoy, Mallow and Mills-street; and sometimes it appeared to spread among those in better circumstances. At Fermoy the postmaster's wife and three children had an attack of fever; and in about two months after this event, he sickened and died. Six medical men were attacked with fever in the neighbourhood of Fermoy and Mallow, and two of them fell victims to it. The nurses and inferior attendants at fever hospitals suffered very generally, as well as other persons employed about these establishments. In some parts of the county of Cork, bordering on the county of Kerry, it was reported that one-half of the population only, and that in others scarcely one-third had remained exempt from an attack of fever.

County of Kerry.

THE circumstances of the county of Kerry were peculiarly favourable to the progress of fever; remote from large towns, and deprived in too many instances of the advantages which result from resident landholders, its sufferings were not perhaps exceeded by those of any other county in the kingdom.

1, 2, 3.—THE time of the first appearance of fever, its greatest prevalence and mortality, corresponded nearly with the accounts received in the county of Cork; but

County of Kerry.

I.
MUNSTER.

but at Dingle and its neighbourhood it was reported to have appeared at a much later period than in other parts of the county of Kerry; and there was no fever there in August and September 1817, when extremely prevalent in other places. This was to be accounted for by its superior advantages over other parts of the county, arising from the linen trade and the fisheries; but something should also be attributed to the remote and insulated situation of the place.

*Deplorable state of
the afflicted poor.*

4.—THE condition of the people in this county greatly furthered the progress of disease. This may be inferred from the following report of their circumstances at the time when fever became epidemic: fuel scarce and dear; farmers generally failing, in consequence of the change from war to peace; beggars passing through the county in crowds, seizing on provisions; great deficiency of employment, and scarcely any manufacture in their towns; the want of food so pressing in the neighbourhood of Tralee, that seed-potatoes were taken up from the ground and used for the support of life; nettles and other esculent wild vegetables eagerly sought after to satisfy the cravings of hunger; influx of strangers to such a degree that it was emphatically said, “the whole country was in motion,” and female mendicants, often carrying about children suffering from fever in their arms, and it was reported to me that a husband, wife and five children, were seen walking in the streets of Killarney, all labouring under fever. Spreading of disease under such circumstances was inevitable, and its progress was furthered in no small degree by general despondency, and by neglect in the persons and dwellings. It extended through families almost universally; and such was the conviction of its contagious nature, derived from sad experience, that the ties of family affection were in some instances dissolved, and the nearest relatives, when seized with the disease, were forced out of the cabins into huts generally placed by the road side, to prevent infection and obtain charitable relief: *this* was, I believe, most liberally supplied; for it is but justice to declare, that the resident gentry were feelingly sensible to the distresses of their countrymen, and disposed to render them every assistance which their means could afford. It has declined considerably in this county, as would appear from the reports received at Tralee, Killarney, Tarbert and Listowel; but cases of fever among the poor still present themselves at Tralee and Killarney; and at Dingle in the parish of Ventry, where the population is dense, there are still a good many cases of fever. In the neighbourhood of Listowel and Tarbert its frequency has considerably diminished.

5.—THE fever was very generally stated to have been more frequently attended with petechiæ, or spots, than usual; a remark which has been made in most parts of this province. Its character has been in general changed throughout the county, and it has assumed a milder form; but at Tralee cases of a severe kind had been admitted to the fever hospital within some weeks past.

6.—THE preventive means seemed to have been employed on a more contracted scale in this than in other counties. Medical aid was reported to have been wanting in many districts; Kenmare, Castle Island, Kilorglyn and Ivragh, were said to be destitute of such assistance, and hospitals for the relief of fever patients were but thinly scattered throughout this county.

7.—As in other parts of the province, the distress was much aggravated by the frequency of relapses occurring, from the time that fever first made its appearance.

8.—THE constitutions of those who recovered did not appear to have been injured. At Killarney dysentery was combined with or succeeded fever in some instances; but it did not there produce fatal consequences, as in other parts of the province.

9.—THAT it extended itself through families of the poorer classes has been already stated. The medical and other attendants on the sick have been severe sufferers; and it was observed to spread occasionally through families in comfortable circumstances also, in cases particularly where defective ventilation of the dwellings was observable: at Tralee, it was reported by an eminent physician, that in a respectable family living at the distance of about twelve miles from the town, in a period included between the 1st of December and 16th of March 1817, twelve persons had been

been attacked successively with fever. It was supposed to have been conveyed by servants, labourers and beggars, to the houses of the upper classes. The nurse-tenders in the hospitals of Tralee and Killarney suffered without any exception, and the physicians received the infection in a proportion far exceeding that observed among other persons in the same rank of life. At Tralee, of nine medical gentlemen who might be considered as peculiarly exposed, four were attacked, and two became victims of the disease: at Killarney, five out of seven of the medical gentleman sickened; two of these had severe illness: thus it appears that of sixteen medical persons, nine were attacked and two died; an occurrence proving that fever was not limited to the lower ranks, in cases of sufficient communication with the sick. The fact also confirms the assertion as to the greater proportional mortality produced by fever in the higher classes of society; for in the hospitals of Killarney and Tralee, the mortality did not exceed one in seventeen.

In this county ten roman catholic clergymen died of fever; these unhappy events occurred chiefly in the year 1818; in the discharge of their office of attendance on the sick, they are peculiarly exposed to contagion: three protestant clergymen also were reported at Tralee to have died of fever, and several no doubt have suffered from slight attacks, which escaped notice or recollection. It should be observed, that none of the small detachments of troops quartered at Ross Castle, in the neighbourhood of Killarney, sickened with the disease when so prevalent in this district; proving that seclusion from the sick, aided by comfortable circumstances and habits of cleanliness, affords a certain degree of security; and this remark applies very generally to the army, so far as I could obtain information respecting it in this province. Here I may observe that the immunity of this class of persons most probably depends on the causes here assigned; for when exposed in circumstances similar to those of the lower classes, they suffer equally with them: thus at Fermoy in the county of Cork, in the 92d regiment, twenty-five cases of fever had occurred from the 13th of last February to the 4th of March; and of these, thirteen had the typhoid form, and two died. The regiment had been for some time engaged in severe duty for the revenue, and had lately made a long march in very bad weather.

County of Limerick.

1, 2, 3.—IN the county of Limerick, the misery occasioned by epidemic fever has not been exceeded in any of the counties hitherto reported on. According to the medical gentlemen of the city of Limerick, its commencement should be referred to the spring, or early part of the year 1817; however it is not improbable that it began at an earlier period; and that distress, arising from scarcity and other causes, increased the resort to hospitals about that time. No doubt can exist of its having prevailed in every district of the county of Limerick; though the want of establishments for the reception of fever patients in this county, except in the city of Limerick, renders it somewhat difficult to obtain information as to the character and progress of the disease through the county at large.

County of
Limerick.

Its frequency seems to have been greatest in the year commencing from November 1817; and it was most mortal during the four months of November and December 1817, and January and February 1818, when the numbers dying in hospital amounted to more than one-seventh of the total number sent out. It was conjectured, and I believe with good reason, that one-fourth of the inhabitants of the town had sickened with fever; and at one time the hospital was so crowded, that in many of the rooms there were five ranges of beds strewed on each floor, some containing six, many four, and few, very few, appropriated to one patient; so that in a small room of twenty-four square feet, the number of patients was not unusually forty. But this miserable state did not long continue: the military hospital in the square was granted by government for fever patients, on the application of the governors of St. John's hospital, and the preventive system was continued with a degree of perseverance and activity proportioned to the exigency of circumstances; yet it has been confidently stated that some thousand persons sickened in their homes, and there received medical treatment, from the impossibility of accommodating them in the institutions. So numerous were the admissions to the hospitals in the year commencing January 24th 1817, and ending January 23d 1818, as to exceed more than

Frequency of fever,
and great mortality.

I.
MUNSTER.

seven times those of some of the years most productive of fever previous to 1816. This unusual frequency of fever is partly attributable to the peculiar circumstances of some part of this city, crowded to excess with a population miserable in the extreme, dwelling in lanes filthy and neglected, and so narrow that of some of them, it may be said without exaggeration, their breadth does not exceed eight or ten feet, that fresh and pure air can scarcely ever find access to them, as nuisances of the most offensive kind seemed every where to abound. Happily, however, the influence of these causes has not been sufficient to prevent a considerable decrease of fever in this city.

4.—SCARCITY of provisions attended the commencement of epidemic fever here, as in other places. The poor in some parts of the county were compelled to collect esculent plants in the potatoe gardens; and I was assured that patients had been received into the hospitals, who had endeavoured to support life for some days together with the leaves of the wild turnip and other plants of this tribe. Deficiency of fuel, owing to the wetness of the season; an unusual resort of strangers and mendicants, to whom, in country places, the commencement of the sickness was frequently attributed, were evils perhaps more prevalent here than in other counties of this province; whilst want of employment, increased by failures in trade, added to the distress in a degree altogether unprecedented.

5.—THE disease, as the returns (No. 18.) from St. John's hospital clearly prove, now presents a different form; and diminishing in frequency, has not become more mortal, as often happens, but on the contrary has assumed a milder type.

6.—IT would be mere repetition to enter into a detail of the means employed in the hospitals to counteract the progress of fever. One of the hospitals (St. John's) has been long established, and conducted on the most approved principles, for the prevention of fever; its arrangements are in many respects entitled to imitation: its registry kept with order and precision; its managers most humane, zealous and intelligent; and sufficient funds seem alone wanting to extend its utility. Many dispensaries have been established throughout the county; but no fever hospitals, except in Limerick.

7, 8.—RELAPSES were frequent here, as in other places, and were attributed to errors in diet; they were almost totally confined to the lower classes.

9.—IT extended through families in the lower ranks very generally. Five of the physicians were attacked with fever: the event in one instance was fatal. The apothecary to St. John's hospital had three attacks of fever. All the nurse-tenders and housekeepers suffered in different degrees. This hospital has so often changed its nurse-tenders, chiefly from this cause, that it has had sixty-three within the last six months. Four of the nurse-tenders, I was informed, were lying ill of fever at the time of my visit.

Many of the roman catholic clergy in Limerick had suffered from the disease, and some of these more than once: one was reported to have taken fever in the Square hospital, of which he died. Several of the protestant and roman catholic clergymen in the diocese suffered; among these were reported the protestant clergyman of Rathkeall, and the roman catholic clergyman of Drumcallachar, to both of whom it proved fatal.

It may be right to observe, that the want of sewers in Limerick, particularly in the old town, must greatly tend to impair the health of its inhabitants.

County of Tipperary.County of
Tipperary.

1, 2, 3, 4.—IN the county of Tipperary, fever has declined more perhaps than in other parts of the province. This was inferred either from an inspection of the hospitals or conference with medical or other gentlemen at Clonmell, Cahir, Cashell, Tipperary, Carrick on Suir, Roscrea and Templemore.

At Clonmell the frequency of fever has been so great, that in a population of about 15,000 persons, three hospitals, together with sheds, in all containing 250 beds, were required for the accommodation of the sufferers: this happened in last July. The applications

applications for admission amounted to from twelve to fifteen daily, and at times rose to twenty. It was calculated that one-third of the inhabitants, or more, if dysenteric patients be included, had been sufferers. On March 14th ultimo, it appeared that the number of beds had been gradually reduced to sixty-three; the patients in hospital were only twenty-one, and three convalescents, and the applications for admission did not exceed six per week: such had been the decline of fever; and most medical gentlemen supposed it to have fallen to its original standard of frequency. Similar reports were obtained at Cahir, Cashell, Tipperary and Templemore: at Roscrea and Carrick on Suir, the malady was not quite subdued, though greatly diminished. At the latter place its frequency has often fluctuated, but it has never been observed to decline so steadily as at present. At Roscrea the sufferings of the poor had been very great, similar to those reported in the county of Limerick. A temporary hospital had been erected, supported by private subscription and grants from government: at the time of my visit, it was closing from want of funds, though sickness still continued to spread through poor families. Its greatest prevalence in every part of this county occurred during the last summer and autumn: at the latter period, dysentery prevailed in most parts of the county, and proved very fatal in Clonmell. In other respects, reports corresponded with those received from other counties. In the brigade of artillery, during three years, from January 1816 to the present time, not more than five cases of simple fever had occurred, and but one fatal case. No class had been altogether exempt from its attacks; but the poor suffered chiefly from its frequency, and the richer classes more in proportion from its fatality.

5, 6.—THE time of its first appearance was referred, by most medical gentlemen, to the spring, summer, or autumn of 1817. Its progress and the means adopted for its prevention were similar to those of other counties, and it seemed equally infectious, spreading among the medical and other attendants at hospitals.

7.—RELAPSES were very frequent, and at Clonmell proved very fatal. It seemed equally infectious here as in other counties. At Clonmell, five medical attendants were attacked. An active, zealous, and humane governor caught the disease, and all the nurse-tenders were attacked: two medical gentlemen died of it. The surgeon and apothecary had both been ill of fever during last April; and a physician and one of the nurse-tenders laboured under it at the time of my visit. Mendicants were supposed chiefly to have given origin to fever at Carrick on Suir, and many facts were stated which confirmed this opinion. No sickness had prevailed at Carrickbeg, till a sick family came into that place from Dungarvan.

The total decline of manufactures in Carrick on Suir have greatly added to the distresses of the inhabitants, and probably contributed in no small degree to extend the malady among them. It deserves remark, that fever has declined much more in the county of Tipperary than in the contiguous county, Waterford. The nature of the soils of these counties may in part explain the difference; the county of Tipperary consisting chiefly of limestone, which is not found in the other county, particularly in the neighbourhood of Waterford.

Thus it appears, that in every part of the five counties of this province, the epidemic fever has prevailed to an extent unprecedented in the recollection of any person living: that it is now generally on the decline, which appears more steady than at any former period; and that in many places it has almost totally disappeared: that it commenced, in most parts of the province, about the latter part of 1816, or beginning of 1817, with the scarcity of provisions and general distress consequent thereon; and that the peculiar circumstances of the people, arising from want of employment, have greatly furthered its progress. Its contagious nature is most fully established by its seizing on the medical and other attendants on hospitals, with scarcely any exception, and by its prevalence among the roman catholic clergy, as well as by its almost universal extension among the poor; it would, therefore, appear highly probable that its diffusion arose chiefly from strangers and mendicants moving through the country, carrying with them the seeds of infection.

The

I.
MUNSTER.

The crowding of apartments and the increase of filth, and neglect, the consequences of the condition of the people at that time, must have tended also to disseminate contagion. These opinions respecting its contagious nature, seem to have taken complete hold on the minds even of the poorer classes, as appears from the practice so generally followed by them, of excluding from their families those who had sickened with fever.

As to the preventive means to be adopted, in order to obviate its future increase or recurrence, it is evident that every measure serving to better the condition of the people, and to diminish pauperism and mendicity, must have a tendency to render fever less frequent, by obviating those causes which favour its progress. But these are not perhaps so immediately within our reach as others which affect the source and origin of the evil. The encouragement of local societies for the relief of the poor through the country, would disclose their wants, make known the appearance of fever among them, and otherwise produce good results, by drawing together the different classes of society, which in the country are too distinct. The establishment of temporary fever hospitals, under the management of such societies, actively instituted and vigorously supported on the first appearance of fever in a district, would tend to check its progress. Much want of information occasionally appeared, as to the best mode of conducting such establishments: in some hospitals various plans of a superior kind were in use, unknown in other establishments; at the same time defects were to be found occasionally, which information could have supplied. The only remedy in this case appears to be the adoption of some plan by which information can be communicated to some common centre, and again diffused in every requisite direction. In every plan that may be devised, I would discourage the resort of the poor to towns in times of distress; for I am persuaded this has been and still continues a fertile source of disease. The distribution of publications proceeding from persons well informed on the state of the poor and the means of obviating sickness, and having sufficient authority, derived from knowledge and experience, to command attention, would also contribute to prevent or restrain the progress of fever.

FRANCIS BARKER, M. D.

RETURN, (No. 1.)

I.
MUNSTER.

Waterford.—House of Recovery.

Date.	Patients admitted.	Discharged, cured.	Died.
1817:			
January - -	52	48	3
February - -	44	45	1
March - - -	56	48	2
April - - -	40	52	4
May - - -	71	48	4
June - - -	77	75	3
July - - -	77	72	1
August - -	101	85	4
September -	84	90	1
October - -	104	94	5
November -	100	94	2
December -	124	118	4
1818:			
January - -	127	100	6
February - -	104	113	4
March - - -	100	107	1
April - - -	118	116	4
May - - -	114	108	8
June - - -	200	156	3
July - - -	313	261	5
August - -	340	322	9
September -	325	306	11
October - -	332	328	17
November -	308	296	18
December -	348	319	23
1819:			
January - -	377	317	23
February - -	328	283	16
March - - -	357	396	25
TOTAL -	4,721	4,397	207

At the end of the year 1817, remained in the hospital, 50 patients.

At the end of 1818, remained in the hospital, 138 patients.

On the 20th of February 1819, remained in the hospital, 206 patients.

Seventeen of the nurses and servants of the house have been attacked with fever within the last fourteen months; four of them have been attacked twice or thrice within the above period.

One nurse died from fever.

There are at present 159 beds laid in the hospital, and the wards of the Leper House, which are appropriated to fever patients; 93 of them have iron bedsteads; 66 are on the floors of the wards; and there are 44 patients obliged to lie double.

The number of patients admitted from the opening of this House of Recovery, in the year 1799 to the 1st of March 1819, were 10,018, of which, up to 1st of March 1818, were 6,629, about 348 per year; in the last year, above nine times the average.

The expenses during the last year amounted to £. 3,628. 13s. 2d. of which sum £. 800 was received from the Government, the rest supplied by local taxation, annual subscriptions and donations.

A very large sum was also subscribed for relief of dysenteric patients and convalescents from fever.

26 APPENDIX TO FIRST REPORT FROM SELECT COMMITTEE

I.
MUNSTER.

RETURN from the *Waterford* House of Recovery, in quarterly periods,
commencing January 1817.

MONTHS.	Patients admitted.	D ^o cured.	D ^o died.
1817:			
January, February, March - -	152	141	6
April, May, June - - -	188	175	11
July, August, September - -	262	247	6
October, November, December -	328	306	11
1818:			
January, February, March - -	331	320	11
April, May, June - - -	432	380	15
July, August, September - -	978	889	25
October, November, December -	988	943	58
1819:			
January, February, March - -	1,062	996	64
TOTAL - - -	4,721	4,397	207

In the first week after the convalescent committee had commenced their operations in January 1819, the number of patients admitted to the Fever Hospital amounted to 115.

The number of patients admitted in the week ending March 30th ultimo, amounted to 44 only: thus it is evident, that in Waterford, fever was considerably on the decline at that period.

RETURN, (No. 2.)

From the temporary Fever Hospital at *Cappoquin*, County of Waterford;
commencing February 6th, 1818.

	Patients.
From February 6th to July 4th, 1818, dismissed cured -	117
Remain in fever - - - - -	10
Convalescent - - - - -	16
Died - - - - -	3
TOTAL - - - - -	146

From July 4th to February 6th, 1819, the fever cases amounted to 73 only.

RETURN, (No. 3.)

From the temporary Fever Hospital at *Lismore*, County of Waterford.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
From May 18th	13	4	1
June - - -	24	19	1
July - - -	31	20	—
August - - -	35	36	1
September - -	17	26	—
October - - -	19	14	1
November - -	32	27	—
December - -	28	21	1
1819:			
January - - -	23	20	1
To February -	12	13	—
TOTAL - -	235	200	6

RETURN, (No. 4.)

From the temporary Fever Hospital, at *Tallow*, County of Waterford.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
From June -	18	18	—
July - - -	38	37	1
August - - -	27	26	1
September - -	35	24	1
October - - -	11	2	—
November - -	27	26	1
December - -	27	21	1
1819:			
January - - -	14	12	2
To February 24th - - -	10	—	—
TOTAL - -	207	166	7

Remaining in hospital 21, on February 24th.

Remaining in hospital 13 patients, on March 2d.

I.
MUNSTER.

RETURN, (No. 5.)

From the House of Recovery at *Youghal*, County of Cork.

Date.	Patients admitted.	Discharged cured.	Died.
1817:			
January - -	5	5	—
February - -	3	3	—
March - - -	5	4	1
April - - -	8	8	—
May - - -	6	6	—
June - - -	10	10	—
July - - -	15	15	—
August - -	28	28	—
September -	33	31	2
October - -	44	43	1
November -	45	44	1
December -	33	32	1
1818:			
January - -	32	31	1
February - -	34	31	3
March - - -	40	40	—
April - - -	33	31	2
May - - -	27	22	5
June - - -	22	21	1
July - - -	43	42	1
August - -	33	30	3
September -	30	30	—
October - -	35	34	1
November -	24	24	—
December -	19	19	—
1819:			
January - -	16	16	—
TOTAL - -	623	600	23

Remaining in the hospital, at present, eight patients, all convalescent.—
February 25th.

From July 1816 to July 1817, the number of patients admitted to the hospital amounted to 51, of whom two died.

From July 1817 to July 1818, the number amounted to 386, of whom 16 died. The extern cases, during the latter period, were 936.

From July 1818 to February 16th 1819, the number of patients admitted to the hospital amounted to 205, of whom four died. During that period, the extern fever cases were 247, of whom four died.

RETURN, (No. 6.)

From the House of Recovery at *Youghal*, in quarterly periods, commencing January 1817.

I.
MUNSTER.

Months.	Patients admitted.	Discharged cured.	Died.
1817:			
January, February, March - -	13	12	1
April, May, June - - -	24	24	—
July, August, September - -	76	74	2
October, November, December -	122	119	3
1818:			
January, February, March - -	106	102	4
April, May, June - - -	82	74	8
July, August, September - -	106	102	4
October, November, December -	78	77	1

In January last, sixteen patients only were admitted; and on February 25th, eight patients, all convalescent, remained in the hospital, which contained twenty beds.

RETURN, (No. 7.)

From the temporary Fever Hospital at *Middleton*, County of Cork.

Admitted to the temporary Fever Hospital, 74 patients, of whom two died.
The hospital is now closed.

RETURN, (No. 8.)

From the Fever Hospital in *Cork*.

Date	Patients admitted.	Discharged cured.	Died.
1817:			
From January	161	140	8
February - -	151	148	8
March - - -	159	160	5
April - - -	181	173	6
May - - -	230	221	6
June - - -	219	229	9
July - - -	213	190	5
August - -	239	220	7
September -	388	324	12
October - -	425	426	19
November -	390	322	11
December -	389	358	11

30 APPENDIX TO FIRST REPORT FROM SELECT COMMITTEE

I.
MUNSTER.Return, (No. 8.)—Fever Hospital, Cork—*continued.*

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
January - -	327	301	13
February - -	344	320	11
March - - -	415	390	12
April - - -	411	394	4
May - - -	509	485	11
June - - -	556	535	8
July - - -	657	636	8
August - -	649	623	13
September -	542	507	22
October - -	542	519	10
November -	465	439	13
December -	462	437	12
1819:			
January - -	377	325	15
February - -	342	295	10
To March -	374	325	12
TOTAL - -	10,117	9,442	281

RETURN, (No. 9.)

Of the Number of Patients discharged cured, and died, in all the different Fever Hospitals of Cork, in the years 1817, 1818, and part of 1819, in monthly periods.

Months.	Fever Hospital and Asylum; discharged.	Died.	Peacock-lane Fever Asylum; discharged.	Died.	GRAND TOTAL:
1817:			1817:		
January - -	140	8	Note.—Monthly returns from this hospital have not been obtained.		—
February - -	148	8			—
March - - -	160	5			—
April - - -	173	6			—
May - - -	221	6			—
June - - -	229	9			—
July - - -	190	5			—
August - -	220	7	{ Opened on July 1st.		—
September -	324	12			—
October - -	426	19			—
November -	322	11			—
December -	436	20			—
1818:					
January - -	422	23	—	—	—
February - -	458	18	—	—	—
March - - -	561	17	—	—	—
April - - -	571	16	—	—	—
May - - -	718	19	—	—	—
June - - -	754	13	—	—	—
July - - -	906	14	2,783	102	—

(continued)

Return, (No. 9.)—Fever Hospitals, Cork—*continued.*I,
MUNSTER,

Months.	Fever Hospital and Asylum; discharged.	Died.	Peacock-lane Fever Asylum; discharged.	Died.	GRAND TOTAL.
1818:			Closed on the 24th		
August - -	924	21	528	10	—
September - -	695	34	—	—	—
October - -	725	17	—	—	—
November - -	710	24	—	—	—
December - -	636	21	—	—	—
1819:					
January - -	459	23	—	—	—
February - -	401	13	—	—	—
March - -	325	12	—	—	—
TOTAL - -	12,254	401	3,311	112	16,078

RETURN, (No. 10.)

From the South Fever Asylum, in *Cork.*

Date.	Patients admitted.	Discharged cured.	Died.
1817:			
December -	195	78	9
1818:			
January - -	139	121	10
February - -	137	138	7
March - -	165	171	5
April - -	204	177	12
May - -	212	233	8
June - -	251	219	5
July - -	282	270	6
August - -	264	301	8
September - -	207	188	12
October - -	234	206	7
November - -	215	271	11
December - -	204	199	9
1819:			
January - -	167	134	8
February - -	138	106	3
TOTAL - -	3,014	2,812	120

This hospital is now closed.

I.
MUNSTER.

RETURN, (No. 11.)

Of Patients relieved from the Dispensary at *Cork*.

Date.	Patients admitted.	Of these, were Patients in Fever.
1817:		
January - - - -	542	108
February - - - -	482	121
March - - - -	530	100
April - - - -	626	213
May - - - -	776	359
June - - - -	795	475
July - - - -	781	420
August - - - -	734	480
September - - - -	822	554
October - - - -	1,077	635
November - - - -	1,055	649
December - - - -	1,003	639
1818:		
January - - - -	1,101	849
February - - - -	989	685
March - - - -	1,116	740
April - - - -	1,143	682
May - - - -	1,311	866
June - - - -	1,593	1,108
July - - - -	1,781	1,203
August - - - -	1,710	1,173
September - - - -	1,513	1,015
October - - - -	1,325	889
November - - - -	1,109	697
December - - - -	931	573
TOTAL - -	24,841	15,233

The greater number of the above fever patients, were sent to hospitals.

RETURN, (No. 12.)

From the Peacock-lane Fever Asylum, in *Cork*.

From July 1st 1817, to July 1st 1818.

Number of Persons admitted	-	-	-	-	-	3,013
Sent home cured	-	-	-	-	2,783	
Died	-	-	-	-	102	
At present in the Asylum	-	-	-	-	128	
						3,013

From the 1st July to 24th August, when the house was closed - 528
Died of this latter number - - - - - 40

RETURN, (No. 13.)

From the Fever Hospital at *Bandon*, County of Cork.I.
MUNSTER.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
From March 13th	14	11	3
April - - -	21	20	1
May - - -	48	46	2
June - - -	109	105	4
July - - -	268	260	8
August - - -	150	144	6
September - -	190	180	10
October - - -	132	116	16
November - -	72	66	6
December - -	69	68	1
1819:			
January - - -	68	60	4
To Feb. 28th -	37	10	1
TOTAL - -	1,178	1,086	62

In the hospital on the 1st of March, 27 patients.

Total number of beds, 49.

Number of beds vacant, 22.

RETURN, (No. 14.)

From the Dispensary and Fever Hospital, *Fermoy*, County of Cork.

In the year 1817, received the benefits of the Dispensary and Fever Hospital;

Interns	-	-	-	-	-	105
Externs	-	-	-	-	-	980

Total	-	-	-	-	1,085
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In the year 1818:

Interns	-	-	-	-	-	346
Externs	-	-	-	-	-	1,000

Total	-	-	-	-	1,346
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In June last the number of fever patients amounted to 101; of these 42 were intern, the remainder extern patients.

Temporary hospitals were erected; but on December 31st 1818, it was reported that the patients in the hospital were

In extra house	-	-	-	-	-	14
Extern	-	-	-	-	-	4
	-	-	-	-	-	25

Total	-	-	-	-	-	43
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Showing a great decline; and this has been progressive.

I.
MUNSTER.

RETURN, (No. 15.)

From the Fever Hospital at *Mallow*, County of Cork.

Date.	Patients admitted.	Discharged cured.	Died.
1817:			
From June -	15	6	—
July - - -	21	10	—
August - -	54	30	4
September -	87	74	3
October - -	56	60	4
November -	48	53	2
December -	56	53	2
1818:			
January - -	77	61	2
February - -	69	50	3
March - - -	50	45	14
April - - -	65	65	4
May - - - -	84	56	16
June - - - -	81	78	11
July - - - -	79	75	8
August - - -	78	78	8
September -	94	82	8
October - - -	91	89	5
November - -	48	48	6
December - -	50	64	5
1819:			
January - - -	47	35	2
To February -	37	48	2
TOTAL - - -	1,287	1,160	109

The number of bedsteads in this hospital amounted to 45.

The number of patients in the hospital, 17 only, on the 4th of March last.

RETURN, (No. 16.)

From the Fever Hospital at *Killarney*, in the County of Kerry.

Date.	Patients admitted.	Discharged cured.	Died.
1817:			
July - - - -	48	47	1
August - - -	46	46	—
September -	50	50	—
October - - -	41	40	1
November - -	47	47	—
December - -	64	62	2
1818:			
January - - -	98	95	3
February - - -	87	86	1
March - - - -	86	83	3
April - - - -	70	69	1

(continued)

Return, (No. 16.)—Fever Hospital at Killarney—*continued.*I.
MUNSTER.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
May - - -	135	134	1
June - - -	146	144	2
July - - -	97	95	2
August - - -	78	78	—
September - - -	68	68	—
October - - -	49	49	—
November - - -	51	50	1
December - - -	42	41	1
1819:			
January - - -	22	21	1
February - - -	22	4	1
TOTAL - - -	1,347	1,309	21

This hospital contained 21 bedsteads for fever patients; and the total number of patients, including many convalescents, in hospital, amounted to 18.

RETURN, No. 17.

From the Fever Hospital at *Tralee*, County of *Kerry*.

Date.	Patients admitted.	Died.
1817:		
From August 8 - } to September 8 - }	26	1
October 8 - - -	36	1
November 8 - - -	39	2
December 8 - - -	40	—
1818:		
January 8 - - -	42	—
February 8 - - -	39	—
March 8 - - -	28	—
April 8 - - -	40	1
May 8 - - -	43	1
June 8 - - -	56	—
July 8 - - -	70	—
August 8 - - -	82	—
September 8 - - -	66	1
October 8 - - -	61	1
November 8 - - -	49	3
December 8 - - -	49	2
1819:		
January 8 - - -	37	—
February 8 - - -	30	1
March 8 - - -	22	—
TOTAL - - -	855	14

The number of beds in the hospital, 24.

The number of patients 10; all convalescent, March 7th 1819.

I.
MUNSTER.

RETURN, (No. 18.)

Of Fever Patients admitted into St. John's Hospital, at Limerick.

Date.	Patients admitted.	Discharged. cured.	Died.
1816 :			
August - -	66	66	1
September -	58	44	6
October - -	74	67	3
November -	58	60	3
December -	75	46	7
1817 :			
January - -	78	85	1
February - -	110	112	3
March - -	136	106	8
April - - -	175	157	7
May - - -	229	189	24
June - - -	187	191	10
July - - -	265	178	14
August - -	274	251	24
September -	265	276	12
October - -	240	220	20
November -	250	203	23
December -	265	181	25
1818 :			
January - -	221	190	49
February - -	196	177	30
March - -	181	175	18
April - - -	194	138	22
May - - -	206	205	20
June - - -	261	281	10
July - - -	387	330	8
August - -	382	385	16
September -	342	338	10
October - -	375	449	13
November -	315	394	10
December -	365	306	11
1819 :			
January - -	203	185	6
February - -	159	165	7
To March 10th	51	51	6
TOTAL - -	6,743	6,201	427

Number of beds, 62.

And number of beds at present occupied, 35.

The use of the military hospital in the square was granted by Government in consequence of the increase of fever; and from the 6th of January to October 6th, 1818, 2,663 patients were admitted to these asylums.

It contained 72 beds and 41 patients, on March 10th 1819; and it was about to be closed at that time.

RETURN, (No. 19.)

From the temporary Fever Hospital at Tipperary.

L
MUNSTER.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
February - -	10	4	1
March - - -	16	11	1
April - - -	20	17	1
May - - -	33	22	4
June - - -	21	17	3
July - - -	36	26	5
August - -	25	25	3
September -	15	19	1
October - -	23	15	3
November -	15	24	3
December -	19	14	—
1819:			
January - -	3	12	3
TOTAL - -	236	206	28

RETURN, (No. 20.)

From the temporary Fever Hospital at Cashel, County of Tipperary.

Date.	Patients admitted.	Discharged cured.	Died.
1817:			
From July 22d -	14	2	—
August - - -	57	33	2
September - -	42	50	1
October - - -	79	35	—
November - -	19	57	2
December - -	26	36	1
1818:			
January - - -	27	21	1
February - - -	17	11	1
March - - -	36	33	2
April - - -	19	15	8
May - - -	26	29	6
June - - -	29	22	4
July - - -	46	31	7
August - - -	23	32	3
September - -	51	27	—
October - - -	39	50	1
November - -	27	33	4
December - -	14	22	1
1819:			
January - - -	13	7	1
February - - -	17	18	1
To March 13th -	8	2	1
TOTAL - -	629	566	47

The number of beds, 30.

The number of patients, on the 12th of March, only 10; and of these, one-half were in a state of convalescence.

I.
MUNSTER.

RETURN, (No. 21.)

From the Fever Hospital at *Cahir*, County of Tipperary.

Date.	Patients admitted.	Discharged, cured.	Died.
From January 1815, to Jan. 1816 - - }	49	49	—
From January 1816, to Jan. 1817 - - }	59	57	2
1817:			
January - -	14	14	—
February - -	7	6	1
March - -	—	—	—
April - - -	17	17	—
May - - -	28	26	2
June - - -	12	10	2
July - - -	23	21	2
August - -	33	33	—
September -	35	33	2
October - -	34	33	1
November -	18	17	1
December -	29	29	—
1818:			
January - -	30	28	2
February - -	25	25	—
March - -	36	33	3
April - - -	21	20	1
May - - -	28	28	—
June - - -	54	53	1
July - - -	49	48	1
August - -	35	33	2
September -	51	49	2
October - -	39	38	1
November -	28	28	—
December -	18	17	1
TOTAL - -	772	745	27

REMARK.

The patients were admitted to the hospital during two years, commencing with January 1815, and ending with January 1817, at the rate of from four to five only per month. This hospital contained accommodation for 34 patients. On the 12th March last, there were only two patients in the hospital, both in a convalescent state.

RETURN, (No. 22.)

I.
MUNSTER.From the temporary Fever Hospital at *Templemore*, County of Tipperary.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
From Septem- ber 1st - -	24	23	1
October - -	22	21	1
November -	9	9	—
December -	14	14	—
1819:			
January - -	7	7	—
February - -	9	7	2
To March 20	6	—	—
TOTAL - -	91	81	4

RETURN, (No. 23.)

From the temporary Fever Hospital at *Carrick-on-Suir*, County of Tipperary.

Patients admitted to the temporary hospital, from November 1st

1817 to January 12th 1818 - - - - - 45

Admitted from January 12th to May 1st 1818 - - - - - 200

On May 1st, a more commodious Hospital, fit for the accommodation of
32 Patients, was established.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
May - - -	45	34	3
June - - -	62	53	—
July - - -	119	110	3
August - -	87	83	1
September -	66	96	4
October - -	79	51	4
November -	80	79	3
December -	56	59	6
1819:			
January - -	29	29	4
February - -	68	47	2
TOTAL - -	961	641	30

I.
MUNSTER.

RETURN, (No. 24.)

From the different Fever Hospitals at *Clonmell*, County of Tipperary.

Date.	Patients admitted.	Discharged cured.	Died.
1818:			
January - - }	457	336	17
February - - }			
March - - }			
April - - -	255	234	10
May - - -	218	181	11
June - - -	384	287	22
July - - -	337	304	11
August - -	341	320	25
September -	266	279	21
October - -	158	206	13
November -	156	176	12
December -	88	96	5
1819:			
January - -	69	97	3
February - -	46	57	4
TOTAL - -	2,775	2,603	154

Total number of beds in the hospital at present, 63.

Remaining in the hospital on March 13th, 21 patients and three convalescents.

Fever has never been so little prevalent as at present, since its first invasion epidemically.

II.

MEDICAL INSPECTION OF CONAUGHT;

BY JOHN CRAMPTON, M. D.

During the months of February and March 1819.

REPORT of Fever in the province of Conaught, including the county of Clare.

County of Galway.

THE county of Galway is never altogether free from Fever; cases of it are always to be met with in the principal towns; and the villages are never exempt from it.

County of
Galway.

No district has escaped; where the population has been less condensed, there has been less fever in proportion; and wherever cleanliness and ventilation have been practised, it has died away.

The soldiers were exempt from fever in Galway, Gort, Loughrea and Tuam. This was attributed to their being kept apart from the people of the towns, and from their habits of cleanliness, and attention to the personal comforts of food, clothing and fuel. Fever has not shown itself in the gaol of Galway, nor in the charter school of Monivae; the same attentions have procured immunity to these classes of people. Few amongst the better classes have had fever, but when it has appeared amongst them it has been generally more fatal. The epidemic has been severe and fatal to those who were anxiously engaged in farming or mercantile speculations; and to those whose circumstances were reduced by the fall of lands, and of the price of cattle, and who were thus thrown into embarrassed circumstances; fortunately those classes, from their superior comforts of cleanliness, were, comparatively speaking, exempt; the instances of attacks of fever being rare amongst them.

The epidemic showed itself early in the southern part of Conaught; this might have been expected, from the condition of the principal towns in the province. The close contracted manner in which the houses are built, the condensed state of the population, together with the total neglect of cleanliness and ventilation, render the occupants peculiarly liable to attacks of contagious fever, which is always resident in the towns where no measures of prevention are taken, and no plan of separation practised under ordinary circumstances.

Fever accordingly showed itself earliest in those towns where the population is most closely collected. It began to excite alarm in Galway, the latter end of summer 1816, and in the neighbouring villages early in 1817. Its appearance in Ballinasloe, Monivae, Loughrea, Gort, Tuam, Headford and Dunmore, was somewhat later than in Galway; it occurred in these stations at the same time early in 1817. And there is reason to conclude that the extension of fever was much indebted to the weekly markets, which are much crowded, and where such opportunities were allowed for promiscuous intercourse between the people of the towns and those of the country.

When an epidemic constitution prevailed, Galway was well circumstanced to favour its extension: The streets are narrow and dirty; dunghills and stagnant pools are frequently met with under the staircases of some of the better houses; a separate family lives on each floor, and there is scarcely any rear to them; add to this, that the cellars are filled with poor of the lowest order, and of the most negligent and filthy habits.

There is a village called The Cloddagh, a little to the south-west of the town, on the beach, where the fishermen reside; here fever prevailed much.

II.
CONAUGHT.

The quay where the fishmarket is held, is in a most offensive condition; immense shoals of fish are there exposed to sale, heaps of them lie on the ground piled up, the offal of them is thrown down; so that a person must literally walk through animal substances in a state of putrefaction, if he wishes to pass in that direction. The stench from this can be perceived all over the town, when the wind blows westerly, which is at least nine months in the year; this is never removed except when the heavy rains wash it away, and thus render the atmosphere more salubrious for a time.

Although there ought to be a good supply of fresh water in Galway, the lake above the town being contracted into a river; yet, from the practice of washing the fish in the river, and the negligence of those who supply the town, the water is taken where the tide comes up and where the fish are washed. Those who drink it, strangers especially, become subject to a bowel complaint; there is reason to suppose that the putrid atmospheric exhalations arising from the fish market, contribute likewise to this.

In other respects Galway may be considered to be healthy, the ground dry and rocky; provisions cheap and plenty for those who can purchase them.

The epidemic from its first appearance in Galway, continued fully two years; its greatest height and mortality were in March 1818; it began to decline in December 1818, and at present fever in Galway is nearly in its ordinary proportion.

The epidemic was at its height, both as to prevalence and mortality, at Ballinasloe in March 1818; at Monivae and Tuam in June 1818; at Loughrea in September 1818, and at Gort in October 1818.

During the continuance of the disease in other parts of the county of Galway, fever prevailed likewise at Oughterard, and in the extensive districts of Joice country and Conamara. The character of the fever there was generally mild, but still the mortality was considerable, as there was no medical assistance in the country.

The epidemic pressed most generally on the poor or lower orders. Antecedent to its appearance they were in a state of despondency for want of employment, they were unable to purchase food or clothing for their families. The small quantity of sustenance they could procure was of bad quality; wet potatoes and bad oatmeal were the products of the harvests of 1816 and 1817. Whole families were obliged to lie with scarce any covering; they had no fire to cook their scanty fare. After having been exposed to the cold rains of these inclement seasons, they searched the fields for esculent roots; and the Prasha weed in many instances served them for a meal.

Numbers of the poor villagers formed themselves into vagrant hordes, and traversed the country; fever often broke out amongst them: hence they generally carried contagion with them, and often communicated it to those who gave them sustenance and shelter.

Those who were unable to proceed from having been seized with fever, were placed in huts which were built over them, as they chanced to lie against a wall or a ditch. They were supplied with water and butter milk by the poor in the vicinity; if there were resident gentry, with porter, wine, gruel and medicines. The mortality was not considerable amongst patients of this description; they were much better circumstanced as to separation and ventilation, than if they were lodged in the inner chamber of a close cabin; and their attendants ran less hazard. For the most part they were placed in public stations, often near a chapel; they were therefore not neglected, being supplied with drink, food and medicine; small contributions of money were also given by those who passed, which were of the utmost service.

The disease was met with mostly in the cellars occupied by the poor in Galway, also in the cabins which compose the suburbs; and in the fishing village which is close to the high-water mark on a dirty strand.

In the suburbs of Loughrea fever prevailed much, also in the mountain villages which are situated on swamps and bogs. Loughrea is much exposed to cold damp winds, which blow across the lake from the south-west; and a considerable quantity of rain falls there, from the vicinity of a mountainous range to the southward, which attracts the clouds.

In Ballinasloe, Loughrea and Tuam, the poor suffered much for want of fuel; the bogs were so overflowed in Summer, that it was impracticable to bring home the turf. Deprived of this comfort, in addition to their other wants, the poor were unable to resist the effects of the inclement seasons: disease therefore naturally ensued.

The character of the disease was the same throughout the whole province, it is the fever which is always to be met with in Ireland; it varied a little in its symptoms, according

according to the seasons: In Winter and Spring the lungs were often affected; in Summer and Autumn the stomach and bowels were frequently disordered; in a great majority of cases the head was much engaged. Spots or petechiæ were very generally present. For the most part, the poor had the fever in a low tedious form; latterly, its type has become shorter; and most of those who appear to have a crisis or favourable change about the 7th or 9th day or earlier, relapse, but ultimately recover. Another change has also been observed within these few months; the fever is more inflammatory, there is more reaction, a higher degree of temperature is evolved; the physicians of the country attribute this last change to the improved stamina of the people, who of late have had food of better quality and in greater abundance.

The means taken to arrest the epidemic in Galway, were judicious and effectual, so far as the physicians were concerned; but they were not sufficiently seconded by the assistance of the people of Galway and its vicinity. A fever hospital was opened in November 1817, and attended gratuitously in turn by the physicians; some of the junior medical men attended the poor at their houses, and in the villages, where they had great difficulties to encounter, in practising ventilation, and in endeavouring to establish habits of improved cleanliness. The hospital was open from November 1817 to 11th August 1818; Government contributed £. 150 to its support. The number of fever cases in August 1818 began to decline, just before the hospital was discontinued, after having given most effectual aid in arresting the progress of the epidemic; most of the poor who had fever in the cellars and suburbs, being removed to the hospital. The impression which the fever hospital made in arresting the epidemic, may be calculated from this, that fever began to decline sooner in Galway as an epidemic, than in any other town in the county; it began to cease in Galway in Autumn 1818; whereas there was no abatement of the disease in Ballinasloe, Tuam, Monivae, Loughrea or Gort, until December 1818. This variation in the time of the disappearance of the epidemic, may fairly be ascribed to the effects of the fever hospital in Galway, whilst no such institution existed in any of the other towns in the county.

In Ballinasloe, and the adjacent district, the poor had the advantage of the active exertion of their landlord, in enforcing cleanliness and ventilation, in the distribution of straw, food and medicines. Ballinasloe is kept cleaner than almost any town in Ireland; the poor are encouraged to practise cleanliness, by annual premiums; and discouraged from allowing dirty habits to prevail, by penalties. Had not such swarms of mendicants passed along the great road which leads through Ballinasloe, it is possible that the epidemic might have been soon extinguished there; especially as the whole district had the advantage of medical aid from the dispensaries of Ballinasloe and Ahercragh, which were in active operation during the whole time of the epidemic. In addition to the money subscribed for these dispensaries, and that contributed by the grand jury, liberal subscriptions were made by the country gentlemen and inhabitants of Ballinasloe, to procure sustenance for the poor.

In Loughrea, meetings of the inhabitants of the town and neighbouring gentry were held; in addition to a liberal grant of £. 130 from Government, money was subscribed and distributed amongst the poor in the suburbs of the town and in the villages; this enabled them to procure food, for which, antecedent to this measure, they were obliged to come into the town, many of them with fever on them, others convalescents, by which means the epidemic had been extended to the shopkeepers.

This distribution of money in small sums, which was done by the physicians who attended gratuitously, and the priests, appeared to be effectual in putting a stop to the progress of fever, by preventing promiscuous intercourse between the villages and the town; an active remedial treatment of the sick, also assisted to subdue the epidemic. Had there been a fever hospital, there is reason to suppose the fever would have subsided earlier. In Loughrea there is a population of above 5,000; the labour therefore of three or four medical men, who attended the poor gratuitously, may be very well calculated.

In Woodford, a village about six miles from Loughrea, there is a dispensary which gave considerable assistance to the poor, and arrested the progress of fever; so that now it has ceased there as an epidemic.

In Gort, about eight months after the visitation of the epidemic, a dispensary was established under the direction of a medical gentleman, who had previously attended the poor in fever gratuitously, both in the town and in the villages; the good effects of this establishment were soon evinced by a gradual diminution of fever.

In Monivae there is a dispensary, the physician attached to which attends the poor in the town and villages.

In

II.
CONAUGHT.

In Tuam also there is a dispensary; the physician annexed to this establishment attends the poor in the town and neighbouring district. The progress of the epidemic has been completely arrested by these two very effective institutions.

In parts of the county of Galway, remote from medical aid, the gentry and the Protestant clergy dispensed medicines, and paid village nurses for attending the sick. Food and straw were likewise distributed. The good effects of these measures were very soon conspicuous.

But in the extensive districts of Conamara and Joice country, which are separated from the rest of the county of Galway by Lough Corrib, where there are but few resident gentry, and where the population is scattered over a wild boggy mountainous range, fever prevailed very generally, and still prevails; scarcely any curative measures having been adopted to put a stop to its progress.

Relapses during the earlier periods of the epidemic, whilst the fever continued in a low protracted type, were not often observed, unless in those instances when they were induced by indiscretion, either in taking food too soon, or from premature exposure to cold; but since the *short fever* (as it has been called in the country) has become the prevailing form, relapses are more common amongst all classes of the community.

No particular diseases have been observed to follow the fever in the county of Galway; the general health of those who have passed through the epidemic disease, appears to have been equally good as before they were subjected to the disease.

No doubt is entertained in the county of Galway, as to the contagious nature of the epidemic fever; amongst the lower orders it uniformly extended through every individual of a family where one became affected. It was carried from place to place by the beggars; hence it spread more rapidly in the suburbs of the towns and villages where the mendicants were usually lodged; and this extension of febrile contagion ceased (comparatively speaking) when measures were taken to exclude these hordes of strangers from sojourning in the towns. The disease rarely extended amongst the families of the better classes; cleanliness, ventilation, washing of floors, change of linen and of the sick into separate chambers, always afforded immunity to those who resided in the same house.

Two of the physicians in Galway had fever in a very severe form, and narrowly escaped. Most of the hospital and village nurses had severe attacks of fever: in fine, few of those who were in close attendance on the sick escaped being infected.

It Ballinasloe the fever was equally disposed to spread; it was most rife in the suburbs, to which the mendicants had access: three villages which were out of the line of their march, were less affected with fever. The physician who attends the dispensaries of Ballinasloe and Ahercragh suffered two distinct attacks of fever, but did not relax in his attentions to the poor. All the nurses who were employed to attend the lower orders in the villages, had the fever in their turn.

Fever was equally contagious at Gort and its vicinity; the priest here suffered from fever, which he caught from his attendance on the village-poor, but he recovered.

In Loughrea the medical men and the clergy of both persuasions escaped having the fever, although there was sufficient evidence of its contagious nature, in its general diffusion through the habitations of the lower orders, when one became affected; and from its prevailing most in the suburbs, where the mendicants took up their quarters.

In the other towns and villages in the county of Galway, the fever equally evinced its contagious nature; many priests who were much exposed, and all the village nurses, invariably suffered from the epidemic in their turn.

The disease was equally disposed to spread in the districts of Conamara and Joice country, as already related.

*County of Clare.*County of
Clare.

IN the town of Ennis, fever still continues, but in a very inconsiderable degree; there had been a temporary and alarming increase in November 1818; but the epidemic has rapidly decreased since that period. Fever has also declined considerably throughout the whole county of Clare, and may be considered as now very little above the ordinary proportion of fever which is always to be met with in the towns and villages.

The same exemptions as in Galway occurred here. The military, the prisoners in the gaol, and the better orders, all escaped. This was attributed to their superior personal

personal comforts, and to the circumstance of attention having been bestowed on cleanliness, ventilation, and separation from the infected.

Fever had appeared in Ennis early in 1817; it was most severe after the scarcity of the summer 1817; its fatality however was never very considerable, except amongst those who had not the advantage of medical aid.

The lower classes were almost exclusively those affected. They had suffered, as they had in the county of Galway, privations of every kind, in food, fuel and clothing; they were dispirited for want of employment; and in the town of Ennis many of them lived in close dirty cellars, the streets narrow, and the population condensed within a small space. The town also had been remarkably dirty and full of nuisances, antecedent to the visitation of the epidemic.

The lower classes chiefly affected.

The symptoms of the present disease, are the same as those of the fever which is always to be met with in the towns and villages; it was more severe in 1817: the head at that time was much affected; it has become milder since the stomach and chest have been occasionally attacked. Bowel complaints are at present prevalent (weather cold and damp) but not combined with fever.

The epidemic was combated by the active exertions of a committee, who meet once a week; they have superintended the sweeping and cleansing of the streets and lanes, the removal of nuisances, and whitewashing, both in the town and villages. A temporary fever hospital was fitted up, on 16th December 1817, with a convalescent ward, in a contiguous building; the hospital was conducted by the gratuitous attendance of five physicians. It is supported by subscription, and by money given by the grand jury, aided by a grant of £. 200 from Government. There were only two patients in fever, and a few convalescents in the hospital, at the time of this inspection.

Relapses from fever did occasionally occur; sometimes from cold, sometimes from errors in diet, but they were comparatively few. Recurrence of fever from re-infection, took place when patients returned to their close and ill-ventilated homes, as it was impossible to make them comply with the directions of the committee.

When fever occurred in a house, it invariably extended through the whole family amongst the lower orders; one medical man had fever, but recovered. It seemed most disposed to spread in Spring and Summer 1818; it did not extend to the upper classes.

Throughout almost the whole of the county of Roscommon, the epidemic was severely felt. It prevailed in Athlone, Roscommon, Strokestown and Boyle; also at Elphin, Tulsk, Castlerea, and Mount Talbot; at present it has nearly disappeared. In Athlone there are still a few fever cases, and Strokestown is not altogether exempt from it. But Roscommon and Boyle, where it was most general at one period, are now altogether free from the epidemic.

In the vicinity of all these towns, the dry rocky grounds were more exempt from fever than the morasses, boggy and mountainous districts; in the former description of places, the crops were of better quality, and the potatoes dryer.

The military and the upper classes escaped fever generally, throughout the whole county. Their exemption is attributed to their superior comforts, as to their habitations, food, clothing, and fuel, and their habits of cleanliness; as well as to practising separation when fever did occur. In the town of Roscommon, however, an exception to this occurred. Fever appeared amongst the soldiers at one period, but it was soon got under. It showed itself afterwards in the Charter School; 39 children having passed through the fever, one of whom died.

In most of the towns and villages in the county of Roscommon, the epidemic appeared early in the year 1817: it showed itself a little later at Boyle, there it prevailed very generally. At Roscommon, Elphin, and Strokestown, its greatest prevalence and mortality were from June to September 1817; at Boyle, in October 1817; at Athlone, in February 1818.

The average mortality amongst the lower orders who had medical attendance, was computed to be about one in thirty.

Many causes conspired to injure the bodily health, as well as depress the mind, amongst the middling and lower orders, which thus subjected them to attacks of fever. The bad quality of the food, which disagreed with the stomach and bowels, the scarcity of provisions, want of fuel to cook their meals, and to protect the lower orders from cold and damp. The breaking of the provincial Bank, which affected the middling and lower orders, produced a general despondency; also the want of employment occasioned by the scarcity of money.

Under these circumstances, almost every individual who went to work or who used the slightest exertion, was seized with shivering, and fever immediately followed;

followed; those also who were most exposed to wet and cold, experienced the same ill consequences.

Among the better classes, many of those who were affected with fever had sustained severe losses, either by the failure of the Tuam Bank, or by the fall on the prices of land and stock. The final issue of a considerable proportion of such cases was unfavourable.

The epidemic was the ordinary fever usually to be met with in Ireland, but it was modified according to the season and to circumstances; at first it was a low fever, which ran out to several days, the head being much engaged; in the Summer and Autumn, the stomach and bowels were affected; in Winter and Spring, the lungs. In January 1818, the fever became more inflammatory, and it has since shortened in its period or number of days. This short fever generally terminates by profuse perspiration, within nine days at furthest; often so early as the 5th or 6th day.

In Athlone, the poor had medical aid from a dispensary; small subscriptions were made and food distributed to the poor. There was also a donation of the Lord Lieutenant's, of £. 50. Whitewashing and fumigation were practised, but the lower orders were very averse to allow such measures to be taken. These measures, although less energetic than what were called for under the severe pressure of the epidemic, and in a town so populous as Athlone, were still effectual in preventing the extension of fever; the small subscription enabled many families to procure subsistence at a time they were unable to support themselves by labour; and the distribution of medicines, under the gratuitous exertions of the physicians, ultimately reduced the proportion of fever cases within the usual limits, always to be met with in a town with so condensed a population as Athlone.

In Roscommon there was more energy; the magistrate, attended by a physician and the priests, went through the town and admonished the people not to harbour the mendicants, or to have any intercourse with them. Constables were stationed to keep them out of the town. The gaol was kept free from fever, by a strict system of separation; no visitors were allowed to go there unless they were inspected by the physician. Large subscriptions of money were collected in aid of the poor; food also was distributed. This relief was limited to two parishes, in order to prevent promiscuous intercourse and to exclude strangers. Ventilation and whitewashing were practised as far as could be done. Some districts were unprovided with medical aid; for instance, between Roscommon and Dunmore, from Roscommon to Athlone, from Roscommon to Castlerea: the mortality in these districts was more considerable.

In Boyle, in addition to £. 40 advanced by Government, subscriptions were also made; a soup kitchen was opened in the town in June 1817. Houses were ventilated and whitewashed, and fumigation was attempted; but this latter measure could not be managed with effect in the dirty cabins of the poor. A dispensary afforded very effective medical aid to the poor, under the direction of the clergyman, and the active exertion of three or four medical attendants.

Where many lay in fever in the same house, separation was effected by placing some of them in outhouses; and in many instances temporary huts were erected for their accommodation; so that the epidemic appeared to be ultimately subdued by perseverance in these active and well-concerted measures.

In Strokestown, where there is no dispensary, little exertion was made to put down the fever. Food, money and medicines were supplied by charitable individuals in the vicinity; and an apothecary gave his gratuitous assistance. Fever still lingers there.

At Elphin there is a dispensary, from whence all the sick poor within three miles of the town are attended; the whole expense of this, including a salary to the physician, is paid by the bishop.

This establishment contributed to arrest the progress of the epidemic, by giving medical assistance to the poor in fever, and by pointing out those who were fit objects for further relief.

At the time fever was most pressing, the bishop opened a fever hospital at Elphin, and supported it at his own expense until the death of Dr. Feeney (who died of fever,) at this time there was only one patient in the hospital; the epidemic therefore at Elphin, may be fairly said to be put down by the judicious and energetic measures that were put in practice.

Dispensaries are also established at Castlerea, Tulsk, and Mount Talbot; these establishments gave considerable aid in subduing the epidemic in their respective districts.

Relapses were frequent during the whole course of the epidemic, especially since the

the fever has become shorter in its period; the relapses are attributed by the country physicians, to want of proper treatment during the convalescence of the poor, and to too early exposure to cold, damp and fatigue. Re-infections have also occurred occasionally; for the poor having few changes of clothes, and from living in crowded cabins, where whole families have been ill of fever.

Few diseases have been the result of the fever. In some few instances, temporary dropsy has appeared in persons advanced in life, and symptoms threatening consumption have been observed in younger subjects; but in neither cases have these occurrences proved fatal.

The epidemic invariably spread through every individual of a family, when one became infected, amongst the lower orders; it was less disposed to do so amongst the better classes, on account of their improved state as to ventilation and cleanliness, and the facility of separation in different chambers.

In Athlone, the fever appeared to be most disposed to extend itself in the months of July, August, and September 1817. None of the medical attendants died from fever; although some of the assistants, the junior especially, had the disease in a mild form.

In Roscommon, this disposition to spread was much observable in June 1817. The medical attendants of Elphin and Ballinroe caught the fever, and died from it. At Strokestown, the apothecary's son and daughter had it; here the disease appeared to be extensively disseminated by hordes of mendicants coming into the town and occupying lodgings in it.

In Boyle, fever spread rapidly: its general diffusion, which was in Autumn 1816, was increased by serving soup to the poor in the town; this attracted crowds, who were obliged to wait a considerable time exposed to cold and wet; the convalescents from fever having unrestricted intercourse with those who were well. The contagious return of the fever in Boyle was fully evinced by the foregoing fact. Two of the medical men had fever in a mild form; and the clergyman's son suffered from it in a severe and protracted form.

County of Mayo.

IN the county of Mayo the epidemic fever was much felt; it prevailed in Ballinrobe, Hollymount, Westport, Newport, Castlebar, Killala, and Ballina; the mountainous district of Erris was also severely afflicted. It is very much on the decline in all the places mentioned; indeed, as an epidemic, it may be considered as almost extinct, with the exception of Killala, where there is rather more fever than in ordinary seasons; and in the district of Erris, where there is no medical assistance.

County of
Mayo.

The same exemption occurred in Mayo as in Galway and Roscommon; the better classes, the military, and the prisoners in the gaols, escaped fever: they were supposed to derive their immunity from having enjoyed the comforts of better food, better clothing, and abundance of fuel.

The dry rocky districts had less fever than those bordering upon the boggy mountainous places. In the former the potatoes were, comparatively speaking, dry, and the other crops of a better quality, and the inhabitants less exposed to cold and heavy rains.

Ballinrobe and Castlebar were less pressed by fever than Hollymount and Kilmain. In Westport, Killala and Ballina, the epidemic was still more severely felt; these last stations are much exposed, and a vast quantity of rain falls at all seasons of the year. The appearance of the epidemic fever did not attract notice so early in the county of Mayo, as in those of Galway and Roscommon, with the exception of Galway and Ballina; there, fever cases were observed in September and October 1816. In the other towns of Mayo its appearance was considerably later; it appeared in Ballinrobe and Castlebar in June 1817; and in Westport and in Newport not until September and October 1817. Here it was observed, that fever sooner rose to its height as to prevalence and mortality, than at those places where it broke out earlier; fever at Westport was at its height in December 1817; whereas in Ballinrobe and Castlebar its greatest prevalence was in March 1818; and in Killala and Ballina not until December 1818.

No accurate account could be obtained, as to the time of the first appearance of the epidemic in Erris; fever, however, has prevailed there to a great extent in the scattered population in that mountainous district, and the mortality has been considerable.

The lower orders throughout the whole county of Mayo, had suffered great privations; they were deficient in the material comforts of food, clothing and fuel; the potatoes were wet and bad, the crops had been unproductive; they were much subjected to the influence of cold and rain, which falls in unusual quantities in that country,

II.
CONAUGHT.

country, part of which is bounded by a high mountainous range, and part exposed to the sea. The poor were in a state of despondency for want of employment; and the middling classes equally so, from the fall of lands and of the prices of stock.

Most of the towns in Mayo are negligently kept, dunghills and other nuisances allowed in the streets, and the population rather condensed for the size of them; more attention is paid to Westport, which looks cleaner. Westport is however exposed to the western blast from the sea, and on every other side surrounded by a boggy mountainous range, which furnishes damp and attracts the rain; the situation therefore cannot be considered salubrious.

Killala is in a very dirty state, although the town is small and stands high, as well as exposed to the sea.

Ballina is a close thickly inhabited town; it was very negligently kept until the epidemic appeared, since that time more attention has been bestowed on it.

The character of the fever has been the same throughout, and does not differ from that usually to be met with in Ireland. It has varied in symptoms with the season; in cold weather the lungs have been attacked; in warm weather the stomach and bowels; and at all seasons the head has been much engaged: latterly, the fever has been milder in its symptoms and of shorter duration. The change for the better first occurred in Westport, in April 1818; in Castlebar, in June 1818; in Ballina, in September 1818; and in Killala, December 1818.

In Ballinrobe, Cong, Hollymount and Kilmain, the cases have been milder since Summer 1818.

*Exertions in Mayo,
to arrest progress
of the Epidemic.*

Considerable exertions were made to arrest the progress of the epidemic, in almost every town in Mayo, both by the medical practitioners and the neighbouring gentry; and it may be observed, that in those towns and districts where most exertions were made, there the fever soonest subsided. This is fully exemplified by Westport and Castlebar, in which town there are fever hospitals; accordingly there the fever soonest subsided. Although fever appeared late in Westport, it very soon arrived at its acme; its sudden subsidence may be fairly attributed to the salutary influence of an excellent fever hospital, and a good system of cleansing, ventilating, and purifying the houses, giving employment to the poor, and supplying them with food. Westport appears much indebted to the liberality of its resident landlord, who contributed largely to the support of a fever hospital, which was assisted also by a liberal grant from Government of £. 200.

In addition to opening a fever hospital at Castlebar, contributions in money were also made by the gentry residing about the town; the streets were swept, dunghills removed; bread, porter, oatmeal and sugar were distributed to the sick poor; the decisive influence of these measures in putting down the fever, was very soon evinced in Castlebar and its vicinity.

The poor were humanely attended at their homes, and huts built for them where the sick were too much crowded, in Hollymount, Kilmain and Ballinrobe. Subscriptions were raised about Hollymount for supplying the poor with food; this measure, by keeping them at their homes, prevented the fever from spreading as much as it otherwise might have done. Independent of the efforts of the medical men, much was done by the Protestant clergy. They distributed straw and medicines in many parts of their parishes, with the best effects.

In Killala there is a dispensary; patients were attended at their homes from this institution. The bishop also employs a medical man for his own tenantry; a considerable number were attended also by him. The bishop distributed money and food among his own tenantry, and gave them employment. The epidemic was much checked by these measures; but as there was but little co-operation in the neighbouring gentry, and as the town is kept in an offensive filthy state, fever still lingers in Killala, where it appeared at least as early as any other town in Conaught.

In Ballina, although there was neither a fever hospital or a dispensary, considerable efforts were made. Ventilation, whitewashing, and fumigations were practised, nuisances removed, the streets and lanes regularly swept, large contributions in money were collected, straw distributed to the poor; soup, meal, and other food supplied; the sick were attended at their homes, and medicines dispensed to them.

Under these judicious and humane measures, the fever declined in Autumn 1818, and has not recurred in any formidable degree since.

Relapses in fever have been frequent, especially of late, since the short fever has become the prevailing form of the epidemic; this has been observed at Killala, and seems to promise a speedy extinction to the fever there.

Other diseases rarely followed the fever, in those who were previously of a sound constitution.

constitution. Dropsy in a few instances was observed in old subjects who had been intemperate; and some of the younger were threatened with consumption.

The contagious character of the epidemic was evinced, by its extending itself through every family amongst the lower orders, when one became affected; amongst the better classes this did not occur; ventilation appeared to diminish the power of the contagion, and separation into another chamber afforded perfect security in an airy house. An advantage attended placing the poor in huts, as this was in point of fact a mode of separation; and if their clothes were washed and ventilated, the convalescents did not disseminate the fever, under cautious management. Mendicants occasionally extended the contagion, but there were fewer of them in Mayo than in the line of the leading roads through Galway and Roscommon. In Ballinrobe no medical men had fever. In Westport and Newport, the apothecary of each place had it in a severe form. In Castlebar the medical men escaped; the same fortunate exemption prevailed in Killala and Ballina. In the vicinity of all these places the village nurses who attended the poor in their homes, and in some instances the strangers in their huts, invariably took fever of some period. No clergyman or priest died of fever in Mayo, though some of them were infected.

The counties of Sligo and Leitrim have experienced the pressure of the epidemic, at least with as much severity as any of the other counties of the Conaught district; it has been more felt by the lower orders; the more comfortable classes have had it in a very reduced ratio. Happily at present, as an epidemic, fever may be said to be almost extinct; cases of it are, however, always to be met with in so populous a town as Sligo, and the country villages are never altogether free from it.

The villages of Mohirow, Grange and Drumcliffe suffered still more than the town of Sligo. Fever prevailed also extensively at Carrick-on-Shannon, and still more so at Mohill, but now fever cases are rare in Carrick and its vicinity; it still prevails in some of the villages in the county of Leitrim.

The chief exemptions from fever, in addition to the better classes, were the gaols of Sligo and Carrick, which though unusually crowded, were kept free by separation, and attention to diet, ventilation and cleanliness. The Charter school of Sligo, and the infirmaries both of Sligo and Carrick, escaped fever; similar precautions having been taken.

In Sligo and Leitrim the epidemic appeared early in the year 1817. In the town of Sligo it was general, it was not confined to the lower orders; many of the middling classes and of the higher took the fever; and amongst those latter description the mortality was more considerable. In Carrick-on-Shannon the fever was equally pressing; and in the district of Mohill its severity was still more felt than at Carrick.

The prevalence of fever in the county of Sligo, was greatest from September 1817 to March 1818; the mortality was also most considerable between those periods; since that time, however, it has gradually declined.

In Leitrim, fever was most prevalent from June to the latter end of October 1817; it abated in March 1818, but was again renewed in July, and continued until Christmas, as may be seen by the monthly returns.

The same remarks are applicable to the lower orders in Sligo and Leitrim, as to the other counties of the Conaught district. Despondency, want of employment, want of food, of fuel and of clothing, reduced their moral and physical powers so low, that they became ready subjects for fever on the application of the slightest occasional causes. The degree of exposure to wet and cold, to which the Irish are well accustomed, and which seldom proves injurious to them under ordinary circumstances, scarcely ever failed in these years of distress to bring on shivering, which was invariably succeeded by fever. Towards the beginning of the Winter 1818, the epidemic began to decline, and it has been decreasing ever since.

The fever assumed the same characters in these northern counties of Conaught, as it had in the others. It became milder within the last six months, and less fatal latterly. It was called *The short Fever*: for in the early periods of the epidemic the disease ran out for two or three weeks; whereas from five to nine days was often the utmost extent of this new form, with this peculiarity, that relapses were often the consequence.

Admirable dispositions were made in Sligo, to meet the severe pressure of the epidemic, both by the physicians and the inhabitants of the town, when the cases became too numerous for the physicians to attend at their homes. Four district medical inspectors were appointed in Spring 1817. The physicians, assisted by those active medical officers, were enabled to extend their aid not only to the town, but to the neighbouring villages. A fever hospital was opened in September 1817, which experience has proved to be fully equal to provide for the poor in and about Sligo;

Admirable Dispositions in Sligo to meet the pressure of the Epidemic.

II.
CONAUGHT.

£. 400 was granted by Government, and subscriptions to the amount of £. 1,500 were collected; the streets and lanes were swept, nuisances removed, the houses ventilated and whitewashed; in addition to this, sustenance was distributed to those who required it. The result of these combined measures was, as might have been expected, a considerable diminution of fever; and under a perseverance in the same well-concerted measures, it has continued to decrease until the present time, when it may be considered nearly extinct as an epidemic.

In the county of Leitrim, little was done to arrest the progress of the epidemic, except those measures which emanated from the medical practitioners. There is no fever hospital in Carrick or in the county of Leitrim; the poor, however, had medicine distributed to them from the county infirmary, and were attended at their homes as far as the other avocations of the medical attendant of the county infirmary would permit it. He attended also to another district seven miles distant from Carrick; and had notices put up in the town, recommending the most effectual steps to be taken for the suppression of the epidemic: under his direction, also, cabins were cleansed, whitewashed and ventilated.

There is no magistrate in the town, or within two miles of Carrick; no further means in addition to those already mentioned were taken, except that a subscription was entered into to supply the indigent with both broth and meal during the Summer, and until the harvest should be collected.

In the district of Mohill, where the fever pressed with unusual severity, much was done by the active operation of a dispensary, which afforded effectual aid to a very considerable number of fever patients. This institution was assisted by a grant of £. 70 from Government, and by subscriptions from the resident gentlemen in the country. During seven months 1,957 patients got relief from this establishment; and though the dispensary is now closed for want of funds, yet it is pleasing to observe that fever has nearly ceased in that quarter; which is in a great measure to be attributed to the exertions of that institution, to cleansing and whitewashing the cabins, and occasionally separating the sick, placing them in outhouses and in huts, and supplying them with the kind of nourishment adapted to their situation. Relapses were very frequent, both in the counties of Sligo and Leitrim, more especially within the last six months. According to the observation of the physicians at Sligo, a great majority of their patients, both among the lower orders as well as in the higher classes, relapsed since the *short fever* has become the prevailing form of the disease. They were unable to assign any particular cause for this change in the period and form of the epidemic.

No particular diseases were observed to follow as consequences to the epidemical fever. In many instances it was surprising to see how soon and how completely the health of the sufferers was re-established, especially if suitable nutriment had been afforded in their convalescence.

In some instances a protracted state of debility was the result; and in those who were predisposed to constitutional diseases, fever frequently proved the means of eliciting the predominant morbid affection.

The contagious nature of the epidemic was fully evinced in the counties of Sligo and Leitrim; it invariably spread from one member of a family through the whole circle, amongst the lower orders, where separation could not well be practised, until the fever hospital became established. One physician (Dr. Ferguson) died. One of the district inspectors likewise fell a victim to the epidemic; the three other inspectors had the fever in a severe form, and scarcely any of the apothecaries escaped being infected by the disease.

In Carrick the epidemic was equally disposed to spread; and in Mohill and its vicinity fever was perhaps more general than in any part of the Conaught district. Here however the beneficial efforts of a dispensary, aided by a liberal grant from Government, of £. 70, and the exertions of the gentry of the country, were observable; insomuch so, that the disease began to decline in Winter 1818, and is now nearly extinct as an epidemic. Had not a salutary check been given to the progress of the disease in these two counties, by the effective institutions already mentioned, it is possible that fever would have extended itself more generally, and have presented obstacles to its removal, which might have proved quite insuperable.

 RECAPITULATION.

FROM the preceding details, it appears that Fever is always to be met with in the western district of Ireland, in the towns, in the villages, and amongst the scattered population throughout the country; but no remarkable increase of fever cases
attracted

attracted notice until the latter end of the year 1816, or the beginning of 1817: fever then appeared nearly at the same time, at every distant point of the western district. No doubt fever was on the increase before the period assigned, in several places; but it is curious to observe how closely the reports from every station agree as to the time of the commencement of the epidemic. From the period it attracted attention, its progress continued for about two years; and there has been very little abatement of it until within a few months antecedent to the time this inspection was made. Happily, throughout the whole province, fever is now considerably on the decline; the cases are less numerous, the disease itself is milder in its symptoms, and shorter in its duration; indeed, in a great majority of the towns and villages in Conaught, as well as in the county of Clare, there is not more than the ordinary proportion of fever cases to be met with, so that as an epidemic the disease may be said to be at an end throughout the whole of the western district.

There were no places in Conaught, which derived an exemption from fever, from their local situation. Almost the whole of Conaught is of a dry limestone formation, the ground uneven, broken by hills and valleys, well watered, and interspersed with lakes; under ordinary circumstances the country is wholesome, and no particular diseases are endemic. It should be observed, that bog forms no inconsiderable portion of the district, and there is a large share of mountain partly bog and partly rock: There are no noxious exhalations from the latter, either in Summer or Winter; and the inhabitants are equally healthy in their vicinity as in other districts, excepting those instances where their houses are built in too damp situations. In the bogs and mountains the potatoes were worse in 1816 and 1817, than in the dryer soils, and the people were more exposed in getting in their late harvest; this circumstance appeared to affect the health of the inhabitants in no inconsiderable degree.

The classes of people who were, comparatively speaking, exempt from fever, were those who had abundance of good food, who were well supplied with clothing and fuel, who were less exposed to the inclemency of the seasons; and whose minds were at ease, or at least above the feelings of despondency.

The upper classes were therefore more spared; here and there, the father of a family solicitous to provide for his children, and disappointed in his speculations, if he became affected with fever, rarely recovered. Fever, under circumstances of despair and distress of mind, was rarely surmounted amongst the better classes. The military, children in charter schools, the inmates of gaols, almost all escaped. Cleanliness, ventilation, attention to diet, and an early separation of the sick, procured immunity to all those classes from the extension of fever.

The epidemic, as already stated, commenced early in 1817; its greatest mortality was in the Summer of the same year. Some slight variation occurred as to the precise epoch of the greatest increase of fever cases, and mortality in different places; but the time of its being first observed in opposite quarters of the province, affords a curious and interesting proof, that the disease was not imported from without. Its appearance in Sligo, for instance, at the northern, and Ennis at the southern extremity, in Galway at the western, and Athlone at the eastern extreme points of the district, was nearly simultaneous: the same may be said of all the intermediate towns and stations, as appears more clearly in the foregoing detailed account. There is a very slight variation from this statement, with respect to Galway, where the epidemic was said to appear half a year sooner; but fever is always endemic in Galway, and the town itself is peculiarly favourable to the development and propagation of that disease. The epidemic also attracted notice sooner in Killala and Ballina, than in most other towns in Conaught. These are exposed situations, and an unusual quantity of rain falls in both of them; in these places also, some of the causes which were favourable to the production of disease, were strikingly observable. The epidemic probably was in existence earlier than has been stated, in other places, but it was not observed until it excited alarm by the deaths of some of the better classes; at all events, the exception of three towns does not invalidate the general conclusion as to the time of its appearance, when no precise day or even month can be assigned for its commencement. There appears nothing like a gradual extension of contagion from one station to another, at successive points of time; which would have been the case had the disease been imported, and carried from place to place in the way the Plague is traced in the southern and eastern countries on the Continent.

Fever then, in many instances, would appear to have been produced independent of contagion; in other words, that fever may have a spontaneous origin. That in those who had their constitutions debilitated by want of food, want of fuel, want of clothing, and under the influence of the depressing passions, which might, in the opinion of many

II.
CONAUGHT.

many be considered to constitute the predisposition, such persons readily, if subjected to fatigue, or exposed to wet or cold, became affected with fever. Within the last few years many, after a severe wetting, conceived they had only caught cold, or, perhaps, that symptoms of inflammation of the lungs were most obvious. Such cases however, after a few days, could not be distinguished from the ordinary form of the epidemic fever; and though such patients had clearly contracted their diseases independent of contagion, yet they were found capable of communicating a similar disease to others. This observation is consonant to the experience of most of the intelligent practitioners in the different principal towns, who conceived that the fever had two distinct sources; one *spontaneous*, arising from the condition of the poor, and the peculiar circumstances of the seasons; the other from contagion: that in both instances the disease was equally communicable from one person to another.

The lower orders were almost the only sufferers from fever, in the first instance; they were precisely under those circumstances which rendered them highly predisposed to disease; so that it only required that any of the usual exciting or occasional causes of fever should be applied, to ensure a full developement of the epidemic. They were feeble for want of sufficient sustenance to enable them to work; they often wanted food, they searched the fields for roots and herbs; the potatoes were bad and unwholesome; they were chilled for want of comfortable clothing or fuel; they were dispirited and desponding for want of employment. All these circumstances exhausted their constitutions, and destroyed the proper and harmonious balance of the circulation, which should ensure health; it only required that they should undergo some slight exertion, or be exposed to cold, and fever inevitably followed such exertion or exposure. Accordingly the labourers were observed at their work, to droop and become faint, to fall into shivering and profuse sweats, which mostly ended in fever. The wet Summers both of 1816 and 1817, thus completed the constitutional injuries in this class of the community.

The general despondency was much heightened in the county of Roscommon and Galway, by the failure of a country Bank; a general bankruptcy among the middling shopkeepers, and insolvency amongst the lower orders, was the result of this. The better classes were thus disabled from giving employment to the poor; and the poor, unable to pay their rents, quitted their tenures, or were ejected from them, and assembled in wandering hordes. Fever broke out amongst them from the privations they suffered, and from their necessary exposure to wet and cold; and they disseminated it wherever they went. Many of these wandering tribes were hospitably entertained with food and shelter, by the proprietors of the land; and in many instances fever was thus communicated to the better classes; and wherever it did occur, the mortality was much higher than with the poor, amongst whom the fever was much milder. The question of the greatest moment is, however, a consideration of the means the most appropriate to meet and arrest the visitation of an epidemic, such as that already described. In many of the towns, from the preceding detail, it is evident that much was done in mitigating its severity, in providing accommodation, medicines, food, and other comforts for the sufferers; in practising whitewashing, ventilation and separation, by removing the poor to huts, barns and hospitals. Fever certainly ceased soonest to press on those stations where these means were best put in practice; and had there been no other source of fever but that of extension of contagion from one individual to another, or from infected clothes and furniture, the curative and preventive means would have sooner shown their efficiency in putting down the epidemic. But notwithstanding the active operation of all these well-concerted measures, in diminishing the quantity of contagion and reducing the numbers of the sick, fever was every day still showing itself; fresh cases occurred in detached situations, from causes over which human means could have no direct or immediate control. In fact, it was not until the stamina and constitutions of the lower classes became improved and recruited by the plentiful harvest of 1818, that these spontaneously-produced fevers ceased to show themselves. The means resorted to and put in practice, were probably the best that the exigency of circumstances permitted; and they were successful, so far as it was reasonable to expect; and had they not been resorted to, the country would have been in a state very little short of Plague.

It may be observed, however, that in some towns, notwithstanding the disinterested activity of the physicians, and the ready assistance afforded by Government wherever it was necessary, that little was done by the inhabitants or neighbouring residents of the country. Collections of money were certainly made, whenever the evil was of sufficient magnitude to threaten their own establishments; but again, when it was less pressing, the subscriptions fell off, and there was a remission of that energy and perseverance from which alone any thing decisive could be expected.

On account of those negligent habits, fever is always to be found in some towns ; by proper municipal regulations, aided by medical suggestions, this evil might be very much lessened, if not altogether done away. The foregoing detail gives an instructive example of the utility of an active committee who meet weekly, who not only regulate the concerns of the Fever Hospital, but superintend the cleansing and ventilating streets and houses ; the result of which is nearly a total cessation of fever in a close town with a considerable population.—(*Vide Report of Ennis.*)

II.
CONAUGHT.

Negligent habits.

Should an epidemic fever again unhappily visit this country, a fever hospital would be required in every principal town, and a dispensary in the smaller ones. Each physician might be allowed one or more intelligent men, such as hospital serjeants, who could bleed, dress blisters, and assist them in dispensing medicines, and keeping the registers.

Under similar circumstances, the county hospitals which now only accommodate a few chronic patients, of such a description that the greater number of them cannot receive much benefit from medical treatment, might either in whole or in part be converted into fever hospitals until the epidemic had subsided. In the country villages, barns and huts, of which experience has already shown the utility, and in some instances tents, might be made the receptacles for the sick, so as to practise separation as soon as possible when fever gets into a family.

Boards of health and managing committees have invariably rendered important services, wherever they have been established; the public appear to give their subscriptions with more cheerfulness, where committees have been formed. The lower orders also submit more willingly to measures for cleansing and ventilating their dwellings, and to the removal of their sick to hospitals, under the guidance and direction of their landlords and protectors, than under the compulsory measures of municipal regulation.

*Boards of health,
and managing committees.*

The clergy of both persuasions have evinced their zeal and services in the cause of suffering humanity, during the prevalence of the epidemic ;—the Protestant clergy, as members of committees and as directors of dispensaries, independent of their charitable donations of food, straw and other necessaries. The Catholic clergy have been equally zealous in their personal attendance on the sick, and in assisting the committees and medical attendants, in the distribution of money, food and medicines, through the villages.

The services performed by the physicians (which have been for the most part gratuitous) and of the other medical attendants, cannot well be estimated; as members of boards and committees, their suggestions have been of the utmost benefit; and that their exertions have been attended with imminent personal hazard, has been evinced by the numbers who have caught the disease, and by those who have fallen victims to their professional devotion.

In case of a return of the present epidemic, or of a visitation of a similar nature at a future period, much might be expected from the local knowledge and active habits of these classes of persons.

It is unnecessary to recapitulate facts which go to prove the contagious nature of the late epidemic ; its disposition to spread has been universally admitted, and evinced by many circumstances. But it is equally true, that fever in many instances has shown itself from causes independent of contagion, although it has ultimately become capable of being disseminated like that which has evidently taken its origin from an infectious source ; but this point has been already sufficiently insisted on in a preceding part of this report.

After what has been said, it requires no minute investigation to assign the principal causes of the late Epidemical visitation; they are to be found in the previous state or condition of the class of people who suffered most from the disease. The circumstances under which they were placed, have been already more than once enumerated. Whenever it shall please Providence, therefore, to afflict a populous country with scarcity of provisions for two successive years ; whilst there exist also additional causes to depress the mind and occasion despondency ; and moreover, when cold, wet and ungenial seasons are superadded to other causes of distress, an unusual number of Fever cases will be the result in those places, where the population is most dense, and where the habits of the people are most negligent.

John Crampton.

II.
CONAUGHT.

APPENDIX.

GALWAY Fever Hospital :

FROM 29th November 1817, to 11th August 1818:—

Discharged cured	-	-	-	-	-	-	-	300
Died	-	-	-	-	-	-	-	9
Total admission	-	-	-	-	-	-	-	309

BALLINROBE Dispensary :

About 300 families were attended ; often 30 houses at the same time.

MONIVAE Dispensary ;—for three years :

Fever Cases.

	1816 :	1817 :	1818 :
Cured	- - - 44	- - - 245	- - - 126
Died	- - - 3	- - - 26	- - - 11
Total	- - 47	- - 271	- - 137

TUAM Dispensary :

From 1st June 1817, to 28th February 1819.

MONTHS.				Males.	Females.	TOTAL.	
1817.	June	-	-	6	4	10	5 Deaths : 3 Men ; 2 Women.
	July	-	-	14	12	26	
	August	-	-	16	16	32	
	September	-	-	16	12	28	
	October	-	-	10	14	24	
	November	-	-	15	17	32	
	December	-	-	8	7	15	2 Deaths : 1 Man ; 1 Woman.
1818.	January	-	-	7	13	20	
	February	-	-	4	3	7	
	March	-	-	8	2	10	
	April	-	-	5	2	7	
	May	-	-	5	3	8	
	June	-	-	2	1	3	
	July	-	-	13	11	24	
	August	-	-	9	5	14	
	September	-	-	2	1	3	
	October	-	-	8	5	13	
	November	-	-	2	5	7	
	December	-	-	9	1	10	
1819.	January	-	-	4	4	8	
	February	-	-	2	1	3	
21 Months				165	139	304	

LOUGHREA:

No register kept; no hospital; no dispensary; population of Loughrea about 5,000; no computation of fever cases made; 50 severe cases in the Town Close in Summer 1818, at one time.

II.
CONAUGHT.

GORT Dispensary:

About 400 poor attended; deaths 30; no accurate register kept; many not reported until moribund.

ENNIS Fever Hospital.

From 16th December 1817 to 16th March 1818:

1st Quarter - -	{	Discharged cured	-	-	114	
		Died	-	-	4	118

From 16th March to 16th June 1818:

2d Quarter - -	{	Discharged cured	-	-	92	
		Died	-	-	6	98

From 16th June to 16th September 1818:

3d Quarter - -	{	Discharged cured	-	-	178	
		Died	-	-	13	191

From 16th September 1818 to 16th December 1818:

4th Quarter - -	{	Discharged cured	-	-	103	
		Died	-	-	9	112

From 16th December 1818 to 23d February 1819:

{	Discharged cured	-	-	17	
	Died	-	-	1	
	In Hospital	-	-	8	26

Total admissions	-	-	-	545
Total deaths	-	-	-	33

ATHLONE Dispensary:

Numbers attended at their homes in Athlone and its vicinity, and supplied with medicine from the dispensary:

From 1st July 1817 to 31st August 1818	-	-	228
From 31st August to 18th September 1818	-	-	27
From 18th September to 12th March 1819	-	-	43

298

BOYLE Dispensary:

September 1st, 1817, under treatment	-	-	102
From 1st September 1817 to 31st August 1818	-	-	780

Cured	-	-	815
Died	-	-	67

Remaining in the books, 31st August 1818	-	-	9
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STROKESTOWN:

No fever hospital; no dispensary.

Numbers attended above	-	-	300
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ROSCOMMON:

No fever hospital; no dispensary; no returns.

Mortality in the county of Roscommon, estimated at 1 in 30.

Ballinrobe, about	-	-	170
Hollymount, „	-	-	200
Kilmaine, „	-	-	80
were	fever; no hospital; no dispensary.		

II.
CONAUGHT.

Fever Hospital, WESTPORT:

From 12th Dec ^r 1817 to 12th March 1818	{	Admitted	-	-	-	-	-	66
		Cured	-	-	-	-	56	
		Died	-	-	-	-	2	
		Remain in hospital	-	-	-	-	8	66
From 12th March to 12th June -}	{	Remain from last	-	-	-	-	8	
		Since admitted	-	-	-	-	55	63
		Cured	-	-	-	-	55	
		Died	-	-	-	-	2	
From 12th June to 12th Sept ^r -}	{	Remain in hospital	-	-	-	-	6	63
		Remain from last	-	-	-	-	6	
		Since admitted	-	-	-	-	52	58
		Cured	-	-	-	-	51	
From 12th Sept ^r to 12th Dec ^r -}	{	Died	-	-	-	-	1	
		Remain in hospital	-	-	-	-	6	58
		Remain from last	-	-	-	-	6	
		Since admitted	-	-	-	-	38	44
From 12th Dec ^r 1818 to 1st March 1819 -	{	Cured	-	-	-	-	37	
		Died	-	-	-	-	1	
		Remain in hospital	-	-	-	-	6	44
		Remain from last	-	-	-	-	6	
From 12th Dec ^r 1818 to 1st March 1819 -	{	Since admitted	-	-	-	-	20	26
		Cured	-	-	-	-	22	
		Died	-	-	-	-	1	
		Remain in hospital	-	-	-	-	3	26

WESTPORT Extern Patients:

From 12th Dec ^r 1817 to 12th June 1818 -	{	Number of cases	-	-	-	-	-	260
		Cured	-	-	-	-	220	
		Died	-	-	-	-	3	
		Under care	-	-	-	-	37	260
	{	Remaining from last	-	-	-	-	37	
		Reported since	-	-	-	-	156	193
		Cured	-	-	-	-	144	
		Died	-	-	-	-	3	
	{	Remain under care	-	-	-	-	46	193
		Remaining from last	-	-	-	-	46	
		Since reported	-	-	-	-	10	56
		Cured	-	-	-	-	44	
	{	Under care	-	-	-	-	12	56
			-	-	-	-		

Fever Hospital, Westport—*continued.*II.
CONAUGHT.

Total numbers admitted into hospital	-	-	-	-	231
Total deaths in hospital	-	-	-	-	7
Total cured	-	-	-	-	221
In hospital 1st March 1819	-	-	-	3	- - - 231
Total extern treated	-	-	-	-	426
„ „ dead	-	-	-	-	6
„ „ cured	-	-	-	-	408
„ „ under care	-	-	-	-	12 - - - 426
Total number treated both in hospital and extern	-	-	-	-	657
Total deaths	-	-	-	-	13

CASTLEBAR Fever Hospital :

Discharged cured	-	-	-	-	38
Died	-	-	-	-	3
In hospital	-	-	-	-	13
Received since the commencement	-	-	-	-	54

KILLALA Dispensary :

Number attended during two years	-	-	-	306
Deaths	-	-	-	3
Number attended by another gentleman not belonging to the dispensary	-	-	-	300
Total	-	-	-	609

BALLINA :

No hospital ; no dispensary ; no returns ; medical attendants frequently visited from 50 to 100 in a day.

SLIGO Fever Hospital :

From 25th September 1817 to 24th March 1818	Admitted	-	-	-	271
	Cured	-	-	213	
	Died	-	-	9	
	Remain in hospital	39	-	-	271
	Remain in hospital	39			
	Admitted	-	-	221	
					260
	Cured	-	-	227	
	Died	-	-	4	
	Remain in hospital	29	-	-	260
	Remain in hospital	29			
	Admitted	-	-	229	
					258
	Cured	-	-	215	
	Died	-	-	13	
	Remain in hospital	30	-	-	258
	Total admissions	-	-	-	789
	Total deaths	-	-	-	26

Population of Sligo about 12,000.

II.
CONAUGHT.

CARRICK-ON-SHANNON :

Population about 1,500.

Number attended in Fever at their homes.

	No.	Died.	Cured		No.	
1817. June - -	7	1	6	1818. March -	5	Cases of persons being 2 or 3 miles distant - - } 256
July - -	14	-	14	April - -	4	
August -	25	2	23	May - -	—	
September	11	1	0	June - -	10	
October -	17	1	16	July - -	33	
November	13	1	12	August -	39	
December	9	-	9	September	14	
1818. January -	12	-	12	October -	33	
February -	14	-	14	November	—	
				December	23	
Within the above period there oc- curred amongst the military - - - - }	7	1	6	1819. January -	11	
In the county gaol	15	1	14	February -	4	
				March -	4	
TOTAL -	144	8	136	TOTAL -	180	deaths 5.

144
210
180
256Registered cases in fever applying
for medicine within the same } 210
period - - - - - }

Total of cases - 790

Besides, in a parish 7 miles distant - - 156 families.

MOHILL Dispensary :

Number treated for fever	- - -	1,957
from August 29, 1817,	Deaths -	53
to March 28, 1818 -		

III.

MEDICAL INSPECTION OF THE
PROVINCE OF ULSTER;

During the Months of February and March 1819.

By DR. JAMES CLARKE.

County of Down.

IN this county the epidemic seems to have totally subsided; a few cases of fever are to be met with in particular situations, such as will ever occur so long as the habits of the lower orders remain unchanged.

County of
Down.

The late epidemic first appeared in this county about the month of October one thousand eight hundred and sixteen, in the vicinity of Downpatrick, and became general in the Spring and Summer following, with the exception of the small town of Rosstrevor.

The circumstances to which the inhabitants owe their exemption, appear to be as follow: The town is out of the common thoroughfare, situated in a remarkably dry soil, with wide and airy streets, devoid of those miserable habitations where the lower orders of travellers and mendicants are lodged; and it is a fact acknowledged by every one, that they were the great importers of infection throughout the country in general. The town is much resorted to in Summer by sea bathers and other visitors, who circulate a great deal of money among the inhabitants, who are thereby induced to keep their houses clean and in good order. Large contributions were made by the neighbouring gentry, during the scarcity in one thousand eight hundred and sixteen, for the purpose of purchasing provisions, clothing, and fuel for the poor, which may be brought forward as an additional reason why they should have escaped an evil so prevalent in the surrounding country. Generally speaking, the epidemic appears to have been at its acmé, as to prevalence and malignity, from the month of July one thousand eight hundred and seventeen, until the month of March one thousand eight hundred and eighteen, from which period it has gradually subsided.

Previous to its appearance, the poor laboured under the greatest privations, proceeding from want of employment, great scarcity and bad quality of provisions, which naturally produced great despondency of mind. Such was the bad quality of the flour, that peasants were frequently known to go a distance of thirty miles to procure bran or pollard, to enable them to make it into bread.

The scarcity of fuel was also severely felt; in many instances they were obliged to eat their provisions raw; and for weeks together during the winter months, their clothes were hardly ever dry.

From the concurrent testimonies of medical men, it does not appear that the epidemic differed materially from the ordinary fever of the country; nor did it vary much in character during its prevalence, except that during the latter periods the symptoms became milder, more tractable, and of shorter duration.

No class of society were wholly exempt from its attacks; with the poor it was most general, but among the higher orders more fatal.

The mortality among the former seldom exceeding one in twenty, while among the latter it amounted to one in five.

On the other hand, wherever it appeared in a poor man's house, scarcely an individual escaped the infection; not having it in their power, unless in the vicinity of an hospital, to separate the person infected from those in health, nor of adopting the necessary measures of cleansing and ventilation. Among the poor, relapses were very frequent, particularly so in the latter periods of the existence of the epidemic, and instances of recurrence of the disease were often observed: some individuals had it three times. Among the better class, relapse was not so frequent; and a second individual in their families being attacked with the disease, was hardly ever known.

Those

III.
ULSTER.

Those who have recovered from it do not appear to have suffered any constitutional injury ; their convalescence, generally speaking, was complete.

*Early separation of
the affected.*

The means adopted throughout the county to prevent the spread of the disease, were nearly the same, and their success proportionate to the energy with which they were carried into effect. In the mountainous districts, where they received no assistance or medical advice, the mortality is reported to have been excessive ; and in such towns as did not establish fever hospital or board of health, scarcely a house escaped the contagion, while in others not more than one in four were visited by the disease. Early separation of the infected from those in health ; cleansing, whitewashing, and ventilating the apartments from which they were removed ; and endeavouring, as far as possible, to exclude mendicants, were the usual means resorted to. But it is much to be regretted, that to procure the co-operation of the poor, was a matter of almost insuperable difficulty. In some instances, the people sent to cleanse their dwellings were refused admission and mal-treated ; and the sick, though convinced of the contagious nature of the disease, were, in the commencement of the epidemic, very unwilling to go into hospital. This prejudice was almost totally overcome by the pressure of the evil ; and the confidence of the poor, in the benefit conferred on them by such establishments, is now universally felt and acknowledged.

In the neighbourhood of Briansford, a family in comfortable circumstances, who took every precaution to avoid the possibility of infection, are firmly persuaded that the fever was introduced among them by a web of linen, which was wove for them by a family, some of whom laboured under fever. What adds strong presumptive proof to their opinion, is, that the two individuals who were employed in preparing the web for the bleach-green, were the first who were affected, and took ill on the same day. The fever hospital accommodation for this county did not exceed sixty beds.

*County of Antrim.*County of
Antrim.

IN this county the epidemic did not commence at so early a period as in the county of Down ; the first cases were observed about July one thousand eight hundred and seventeen, in the vicinity of Belfast and Lisburn ; many places which subsequently suffered severely, were not visited by it until September or October following.

The only district which escaped the disease, was the island of Raghlin ; the proprietor of which took the greatest pains to prevent the contagion being imported from the main land, by cutting off all communication as far as possible, and by an accurate examination of those who landed.

In the year one thousand eight hundred and fourteen, a very severe fever appeared in the island, which, there is every reason to suppose, was imported by some of the inhabitants who went to Scotland to see one of their relations who died of fever ; they brought his clothes home, and shortly after the fever made its appearance and spread through two or three neighbouring families. From this circumstance they were particularly alive to the danger of infection, and their insular situation enabled them to avoid it.

The epidemic has almost totally declined in this county. In the suburbs of the town of Belfast, and in mountainous or marshy districts where it raged with the greatest violence, a few cases are still to be met with, but they are not malignant, and are declining in number every day. A circumstance appears worthy of remark, that the better class of people in this county suffered, comparatively speaking, little or nothing from the fever ; the number affected, and the comparative mortality, were not by any means so great as in the neighbouring counties : this many of the inhabitants are inclined to attribute to the more prompt and extensive hospital accommodation afforded to the poor in fever. The hospitals of Belfast, Lisburn, and Randalstown, contained nearly three hundred patients.

It was remarked to me, that a district of four townlands in the vicinity of Randalstown, the inhabitants of which were noted for their industry, cleanliness, and comfort, exceeding what is ordinarily to be met with in Ireland, escaped the epidemic until a late period, when it appeared after they had inadvertently given lodging to some mendicants.

In some houses, the inhabitants of which were remarkable for their poverty, the disease seems to have taken such deep root, that for nearly two years they were never entirely free from it.

In every other respect, the circumstances of this county so accurately coincide with those already mentioned in the Report of the county of Down that I think it unnecessary to repeat them.

III.
ULSTER.

County of Armagh; February.

NO epidemic here at present, and few cases of fever to be met with.

County of
Armagh.

About the month of June 1817, it was first observed, that the epidemic had taken root in the towns of Armagh and Lurgan, and was most prevalent and fatal from that period until the following Spring. In this county the only circumstance I can point out, differing from what has been already stated, is, the extraordinary prevalence and mortality of the disease among the better class of society in the town of Armagh. To account for this is matter of great difficulty; I shall therefore merely state a few facts, and leave it to the judgment of others how far they may have influenced the disease. In the winter of 1816 and 17, when the poor were suffering under misery and privations of every description, owing to the scarcity and bad quality of provisions and fuel, soup shops were established for their relief, with the most humane and benevolent intentions.

This collected an immense crowd of mendicants, and poor of all descriptions, into the town, who horded together in miserable lodging houses, lying on the floor on straw; and, in many instances, taking up their quarters in the market-house, or any place where they could procure shelter.

No board of health was formed; and the fever hospital which they attempted to establish, was on so very limited a scale, and open for so short a period, that wherever fever appeared, having no means of removing the infected from those in health, it uniformly spread with the most fatal rapidity.

No board of
health.

The town is thickly inhabited, and the houses of the lower orders are very numerous.

I did not hear of any district in this county, which escaped the contagion. A gentleman of fortune and high respectability in this county, is supposed to have contracted the fever from a great coat, which he borrowed from a person in whose family the disease existed.

The fever hospital was capable of receiving 40 patients, 20 of whom were lodged in temporary sheds, and it was open only 5 months; during which period one hundred and sixty-three patients were admitted, eleven of whom died.

In every other respect, as to the nature of the disease, and the circumstances of the poor, I was unable to discover any variation from what has been already stated.

County of Monaghan.

EPIDEMIC has completely declined, and very few cases of fever to be met with at present.

County of
Monaghan.

About May 1817, an increase of fever cases was first observed to such a degree as to excite alarm throughout the county. In the preceding December several cases of fever occurred in the gaol of Monaghan; and it is the opinion of some of the medical men, that from that source it took its origin.

How far the facts will bear them out in this opinion, I am not prepared to say; I believe there is no doubt that the fever which prevailed at that time in the gaol, was conveyed to one or two families in the neighbourhood, who had some intercourse with its inmates; but it does not appear to have assumed the character of epidemic, until the period before mentioned; nor did its symptoms differ materially from the fevers of the adjoining counties.

Its greatest prevalence and mortality were during the months of July, August, and September; in October it manifestly declined. No district or class of society were exempt from it. Among the lower orders scarcely a house escaped; and where the infected were not speedily removed, it spread rapidly through the family.

Among the better class, hardly any instance occurred of a second person in the house taking the disease; nor was the mortality among them remarkable.

The fever hospital in the vicinity of the town of Monaghan contained fifty beds; but so anxious were the inhabitants to separate the infected from those in health, that, when the pressure was great, they put two patients into each bed; and during the fourteen months it was open, 1,037 persons were admitted, of whom 51 died.

County

*County of Tyrone.*III.
ULSTER.County of
Tyrone.

EPIDEMIC has completely declined in this county.

In the month of July 1817, it appeared universally, and was most prevalent and malignant in the following Winter months.

In the neighbourhood of Strabane, it appears from very accurate returns, that nearly one-fourth of the inhabitants were affected with the disease, of whom somewhat more than the ordinary average died. In the mountainous districts, particularly in the vicinity of Pomeroy, the mortality is reported to have been excessive.

I am inclined to attribute the great prevalence of the disease in this county, to the large portion of mountainous district it contains; the inhabitants of which, in many instances, as soon as they became distressed, quitted their homes, crowded into the towns, and brought filth and infection along with them.

The hospitals of Strabane, Cookstown, and Dungannon, contained 100 beds; a number by no means adequate to the population. In other respects I know of no diversity from what has been already mentioned.

*County of Derry.*County of
Derry.

NO epidemic here at present; nor has it ever prevailed so extensively as in the counties before mentioned, with the exception of the towns of Newtownlimavady and Londonderry.

It commenced in Londonderry about the month of April 1817, but did not spread through the rest of the county until July or August, and in some places not quite so soon.

In the town of Magherafelt, great exertions were made to relieve the poor in the Winter of 1816 and 1817; and a large sum of money was expended in procuring them the necessaries of life; and here, in particular, the epidemic never raged to any great extent.

In Newtownlimavady a soup shop was established, which collected an immense crowd of poor in the town. In Londonderry, the fever prevailed principally in the suburbs, which are extensive, and situated in a low damp situation.

Temporary booths were erected in the vicinity of the town; and during the prevalence of epidemic, six hundred and thirty-six fever patients were admitted, thirty-five of whom died.

*Counties of Donegal, Fermanagh, and Cavan.*Counties of
Donegal, Fermanagh,
and Cavan.

IN these three counties, from the best information I could procure, the epidemic was not near so prevalent as in other parts of the province. It appeared among them about the commencement of the Summer of one thousand eight hundred and seventeen, but neither the number affected, nor the mortality, were so great as in the other districts. This may partly be ascribed to their not being so much in the thoroughfare of the great tide of labourers travelling towards Scotland and England, in the Summer months, by whose means, there is reason to think, the contagion was spread in the towns to a great degree. Their fever establishments, consequently, were few, and the numbers received very limited. In the towns of Cavan and Enniskillen small hospitals were opened, but on a limited scale; and it was not found necessary to enlarge them. In the county of Donegal, I did not hear of any fever hospitals whatever.

In the mountainous districts, as before remarked, the cases were more numerous, particularly in that part of Donegal called Innishowen. At present there is as little fever as ever was known throughout this district of country.

From the foregoing statement it appears, that the province of Ulster was affected very generally with epidemic fever, from the Spring of one thousand eight hundred and seventeen till the Summer of one thousand eight hundred and eighteen. From that period it has gradually declined; and at present it may fairly be stated as reduced to its ordinary standard, and no longer to exist as epidemic.

In its nature it does not appear to have differed materially from the usual fever of the country, and perhaps may be considered as a mere extension of it; to which the following circumstances highly contributed.

The unusual quantity of rain which fell in the Autumn of one thousand eight hundred and sixteen, rendered provisions deficient in quantity and quality.

It also deprived the poor of their usual supply of fuel, which they were unable to
remove

remove from the bogs where it was cut. These privations, combined with want of employment, produced a great depression of spirits, under which they became highly susceptible of receiving the contagion of fever. There is great reason to apprehend that this predisposition to fever, will exist more or less, till the habits and manners of living of the lower orders be radically changed.

As a proof of the foregoing statement it may be adduced, that the poor were uniformly the greatest sufferers; and it seemed to rage among them, in a degree proportionate to the privations they had endured.

In the mountainous districts, with no resident gentry, and the inhabitants left to their own resources, and where the crops actually rotted in the fields, the prevalence and mortality of the disease appear to have been very great; whereas the better classes, the military and public institutions, comparatively speaking, suffered little or nothing.

That the disease was highly contagious, wherever ventilation and cleanliness were not resorted to, appears from the universal spread of it among the families of the poor; and from the number of clergy, medical, and other attendants on the sick, who were affected by it.

That it was possible to convey it by means of clothes, bedding, &c. is not doubted by the most competent judges I had occasion to meet; and there are but few who are not prepared to relate numerous and well authenticated instances, to support their opinion.

The extreme difficulty of eradicating the disease from the dwellings of the poor, and the manner in which it seems to have been disseminated over the country by the lower order of travellers, and mendicants, appear to me conclusive on this point.

With respect to preventive measures, little can be added to those which have been resorted to already, with so much benefit to the country at large, and so much credit to those whose wisdom and liberality contributed eminently to carry them into effect; and I am happy to add, so gratefully and universally acknowledged.

It is to be hoped, that the present system of education, carried on so generally through the country, will, in time, produce such a reformation in the habits of the people as will ultimately eradicate the evil.

After a year of scarcity in particular, endeavouring as far as practicable, to supply the poor with employment, food and medical assistance, so as to prevent the spread of fever among them, seems highly requisite. Wherever these measures were adopted with energy and activity, the result was highly favourable; but I should recommend great caution to be observed in the mode of putting them into effect, as it appears the establishment of soup shops in towns was frequently attended with injurious consequences. It is obvious, therefore, that in affording assistance, every measure, tending to collect them in crowds, should be avoided as far as possible.

In many instances, the boards of health found great difficulty in procuring the co-operation of the poor; therefore some sort of medical police might be attached to them, whose duty it should be, to enforce the necessary measures of cleansing, ventilating, and removing nuisances.

Where it is found necessary to establish a temporary fever hospital, confining the medical attendants to one or two, excites jealousies and ill-will; it would, therefore, be preferable to give each respectable practitioner a share in the public duty: from which I have no doubt great benefit would ensue to such institutions, and to the public in general. And as, in some instances, the first appearance of the epidemic has been observed in gaols, such establishments should be provided with an appropriate apartment, to which contagious or doubtful cases should be instantly removed.

It is to be regretted, that the county hospitals which in general are large and commodious, have no provision whatever for patients labouring under contagious diseases. Some change, either in the construction or management of such institutions, is very desirable.

I would earnestly recommend, that the Boards of Health should continue for some time longer to exert their useful measures of cleansing, ventilating, and removing nuisances; as it is not improbable that, during the heat of the ensuing Summer, some increase of the number of fever cases may take place, so as once more to give rise to the idea, that epidemic again prevails.

And I have no doubt that any measure suggested by Government, to the resident gentry, clergy, and medical men of the province, will be instantly attended to, as they have universally appeared most anxious to adopt every practicable means likely to mitigate the misery of the poor, or to benefit the country at large.

*Recommendation of
Boards of Health.*

James Clarke.

APPENDIX.

III.
ULSTER.Monthly Report of the Fever Hospital in NEWRY ; from its commencement,
12th July 1817, to the 18th February 1819, inclusive.

Months.	Admitted.	Died of Fever.	Died of Diseases supervening Fever.	Discharged cured.	Remained in Hospital at the end of each Month.	Total No receiving Medical Aid.
1817.						
From 12 th to 31 st July	61	—	—	35	26	61
August - - -	99	5	2	80	38	125
September - -	116	1	—	103	50	154
October - - -	106	4	3	105	44	156
November - -	102	4	—	101	41	146
December - -	86	7	1	83	36	127
1818. January -	75	2	6	67	42	111
February - - -	64	2	2	66	36	106
March - - - -	76	3	—	76	33	112
April - - - -	72	2	1	68	34	105
May - - - - -	94	1	1	86	40	128
June - - - - -	91	—	—	90	41	131
July - - - - -	150	2	—	136	53	191
August - - - -	101	2	2	95	55	154
September - -	49	2	—	67	35	104
October - - - -	46	1	—	63	27	91
November - - -	42	—	—	44	25	69
December - - -	34	2	1	37	19	59
1819. January -	17	1	1	15	19	36
February 18th. -	13	—	2	18	12	32
	1,494	41	16	1,435	706	2,198

Received from Government the sum of - - - - - £.350.
D^o the Grand Juries of the counties of Down and Armagh - 175.
D^o by Subscriptions from the town of Newry - - - 765.

Monthly Report of the BELFAST Fever Hospital.

Months.	Admitted.	Died.	Dismissed.
1817. August - -	73	—	73
September - - -	164	6	158
October - - - -	201	9	192
November - - -	200	9	191
December - - -	228	17	211
1818. January -	193	14	179
February - - - -	142	11	131
March - - - - -	152	16	136
April - - - - -	139	8	131
May - - - - - -	79	7	72
June - - - - - -	90	4	86
July - - - - - -	125	6	119
August - - - - -	112	6	106
September - - -	138	7	131
October - - - - -	174	5	169
November - - - -	148	10	138
December - - - -	114	7	107
1819. January -	65	4	61
TOTAL - - - - -	2,537	146	2,391

A Monthly Report of the Fever Hospital in LISBURN; from the 7th of June 1816,
to the 7th of February 1819.

III.
ULSTER.

	Admitted.	Dismissed.	Died.
From 7th June to 7th July -	23	12	—
- 7th July to 7th August -	24	10	—
- 7th Aug ^r to 7th Sept ^r -	26	9	—
- 7th Sept ^r to 7th Oct ^r -	26	13	—
- 7th Oct ^r to 7th Nov ^r -	24	10	1
- 7th Nov ^r to 7th Dec ^r -	16	7	2
- 7th Dec ^r to 7th Jan ^y -	25	6	3
- 7th Jan ^y to 7th Feb ^y -	24	8	2
- 7th Feb ^y to 7th March -	29	9	3
- 7th March to 7th April -	25	5	2
- 7th April to 7th May -	25	7	2
- 7th May to 7th June -	20	8	3
- 7th June to 7th July -	16	10	—
- 7th July to 7th Aug ^r -	24	8	2
- 7th Aug ^r to 7th Sept ^r -	26	10	2
- 7th Sept ^r to 7th Oct ^r -	27	8	2
- 7th Oct ^r to 7th Nov ^r -	18	10	—
- 7th Nov ^r to 7th Dec ^r -	29	9	—
- 7th Dec ^r to 7th Jan ^y -	19	6	—
- 7th Jan ^y to 7th Feb ^y -	23	8	—
	469	173	24

Note.—In this Return and some of the succeeding, all of which are accurate Copies from those delivered to me from the several Fever Hospitals, there is an error in the Dismissals; the statement of Admissions and Deaths I believe to be correct.

James Clarke.

Monthly Report of the RANDALSTOWN Fever Hospital; from 3d October 1817,
to 14th December 1818, inclusive.

Months.	Admitted.	Discharged.	Died.	Total.	Observations.
1817. October -	45	13	1	14	During this period there was three hundred out patients, most of them labouring under Typhus.
- November -	41	29	2	31	
- December -	31	33	4	37	
1818. January -	12	11	2	13	
- February -	19	26	1	27	
- March -	13	18	—	18	
- April -	3	16	—	16	
- May -	42	9	—	9	
- June -	25	20	2	22	
- July -	24	41	1	42	
- August -	22	23	1	24	
- September -	10	12	1	13	
- October -	8	12	1	13	
- November -	4	14	—	14	
- December -	—	6	—	6	
	299	283	16	299	

III.
ULSTER.

An accurate Monthly Return of the number admitted, discharged, and died in the Fever Hospital at ARMAGH; from its commencement, October 1st, A.D. 1817, to its closure in February 1818.

Month.	Admitted.	Discharged cured.	Died.	Remarks.
October - -	52	21	3	One of those who died this month was a child of three weeks old; another was sent in a dying state; and the other was asthmatic. One of them died of hemu- cheye from the intestines; another, a child of five years, died of suffocation from immense glandular swellings in the neck; the majority of them had typhus gravior.
November - -	50	37	7	
December - -	13	31	1	
1818. January -	5	19	—	
February - -	1	1	—	
Total -	121	109	11	
Re-opened 9th September 1818.				The disease at this time was much milder; the majority having typhus miten, but a good many cases of typhus gravin.
September - -	42	16	—	
October - -	—	26	—	
	42	42	—	

REPORT of MONAGHAN Fever Hospital; commencing August 16th, 1817.

Months.	Admitted.	Discharged.	Died.	In Hospital.
August - -	159	89	3	67
September - -	100	74	13	80
October - -	98	100	5	73
November - -	81	86	5	63
December - -	78	68	2	71
January - -	75	84	2	60
February - -	80	59	1	80
March - -	29	86	6	15
April - -	9	12	2	52
May - -	76	32	2	10
June - -	54	32	4	30
July - -	129	112	4	103
August - -	60	104	2	57
September - -	9	44	—	20
	1,037	964	51	—

COOKSTOWN Fever Hospital.

III.
ULSTER.

Months.	Admitted.	Discharged.	Dead.	In Hospital.
1817. October - -	46	27	3	16
- November - -	34	35	2	13
- December - -	24	22	1	14
1818. January - -	30	36	1	7
- February - -	18	15	1	9
- March - -	16	25	—	—
TOTAL - -	168	160	8	—

KILDRESS Fever Hospital.

Months.	Admitted.	Discharged.	Dead.	In Hospital.
1817. October - -	38	25	2	11
- November - -	50	42	3	16
- December - -	31	37	2	8
1818. January - -	29	24	8	13
- February - -	23	23	1	12
- March - -	19	31	—	—
TOTAL - -	190	182	8	—

From the 1st of September 1817, till the 31st of August 1818, there were 1,112 extern patients prescribed for in Typhus, of whom 28 died.

A Return of Fever Patients accommodated in the temporary Hospital DUNGANNON, between 1st July 1817, and 1st February 1818, when it closed.

Months.	Admitted.	Discharged.	Died.	Remarks.
July - -	19	16	—	
August - -	24	19	2	
September - -	38	31	2	
October - -	50	64	3	
November - -	36	41	1	Child, not of Fever.
December - -	25	21	1	Child, not of Fever.
January - -	19	19	—	
	211	211	9	

Note.—1,663 extern patients treated, supplied, &c. during the above period.
26 Beds.

III.
ULSTER.

A General Report of the STRABANE Fever Hospital.

Month.	Admitted.	Discharged.	Died.
1817. August - - -	90	37	—
September - - -	71	69	3
October - - -	80	96	5
November - - -	67	71	2
December - - -	62	50	2
1818. January - - -	44	46	1
February - - -	14	22	1
March - - -	12	19	1
April - - -	17	16	—
May - - -	7	12	1
June - - -	18	12	1
July - - -	24	20	1
August - - -	13	17	1
September - - -	16	18	—
October - - -	16	16	—
November - - -	8	12	—
December - - -	10	10	—
1819. January - - -	8	11	1
February - - -	8	6	1
TOTAL - - -	585	560	21

Remaining in Hospital, March 13, 1819 - - - 4.

IV.

MEDICAL INSPECTION OF THE
PROVINCE OF LEINSTER;

performed in February and March 1819: by Dr. CHEYNE.

CONTENTS:

1st Tour, - - - Wicklow and Wexford - - - - -	p. 69
2d D° - - - - Carlow, Kilkenny, Queen's County and Kildare - - -	72
3d D° - - - - Westmeath, Longford and King's County - - -	75
4th D° - - - - Meath and Louth - - - - -	77
Dublin - - - - -	78
Summary - - - - -	80
Concluding Observations - - - - -	81
Appendix - - - - -	83

N. B.—The Figures (1 to 9) relate to the heads of Inquiry which were agreed upon by the Inspectors, before they set out on their respective Tours:

1. - - - Relates to the present state of the Epidemic.
2. - - - The Class of people which have suffered most by it.
3. - - - The time of its first appearance, and greatest Spread and Mortality.
4. - - - The State of the Community when it first appeared.
5. - - - The character of the Disease,
6. - - - Preventive means.
7. - - - Relapse and recurrence.
8. - - - Permanent Effects of the disease on the Constitution.
9. - - - Its Infectiousness.

Wicklow and Wexford.

1. IT is a common opinion, that the Fever which of late prevailed so extensively, originated in the Winter of 1816 or succeeding Spring; but my inquiries in the counties of Wicklow and Wexford have led to a different conclusion. In some parts of the county of Wicklow, as for example, in the neighbourhood of Stratford-on-Slaney, fever of the same general character with the present, was more frequent and fatal four years ago than it has been since; and it was universally admitted, by every one acquainted with the condition of the poor, that fever is never altogether absent; that at all times there are cases of it to be met with in every populous or extensive district.

Counties of
Wicklow and
Wexford.

In Wicklow the epidemic was abating; but in Wexford, where it had never prevailed to the same extent, after an appearance of decline in November, it was again rather increasing about the time of my inspection.

Fever had existed among the labouring poor in most parts of these two counties; there were some cases among the farmers; and here and there a case occurred in the upper ranks.

IV.
LEINSTER.

3. In some parts of Wicklow I found it difficult to ascertain the period at which fever became epidemic; but it was pretty generally considered as commencing in the end of Summer 1817, and was at its height about the end of that year and beginning of 1818. In Wexford no considerable increase of fever took place before the Summer or Autumn of 1818, and the epidemic was at its height in that county in September and October 1818; many had died in Wicklow during the height of the epidemic, but in Wexford the mortality had been inconsiderable.

4. In the county of Wicklow the disease had been most prevalent among the wretched peasantry in the mountains, in a tract commencing above Newtown-mount-Kennedy, and extending to Tullow in the county of Carlow. But it is observable, that at Rathdrum, which is the centre of that range, I was credibly informed that the same disease was as prevalent in 1816, as at the time of my visit. In the county of Wexford it prevailed in the back lanes of the towns; for example, in the suburb of the town of Wexford, called John's-street, where the houses are ruinous and extremely filthy; and where I understand there are always some cases of fever to be met with.

4. Although the inhabitants of these places, at first sight, may appear differently circumstanced, there were many points in which they resembled each other, when fever began to rage among them. They were equally cut off from all communication with the upper ranks of society. In some of the mountain parishes, Hacketstown for instance, on the borders of Carlow, there is not a resident gentleman but the rector; yet I am persuaded, that the inhabitants of the bye lanes of the towns have as little intercourse with their superiors in rank, as the inhabitants of these remote districts.

The state of the poor when the epidemic appeared, was worse than ever it had been known, in consequence of a succession of bad seasons; in Wexford, at the period of my inspection, it was still very bad. In some places not one half of the labouring poor had employment; many of the farmers had discharged all the labourers they were wont to employ; and few, if any, retained the usual number. At an average, potatoes were 5*d.* per stone, labourers' wages about 10*d.* a day without food; and it is computed that a labourer at his three meals will consume a stone of potatoes daily. Turf in most places was uncommonly dear. The clothes of the poor were nearly worn out, and many of them slept in their body-clothes for want of blankets. Depressed in strength and spirits, they were thrown open to the disease which every where existed among them; and which it was generally thought was propagated not merely from one neighbour to another, but by the swarms of beggars who overran the country: and it is well known that, from motives of mistaken charity, beggars are never refused admission into the cabin of the labourer, or the house of the farmer. From Dublin to Gorey, I heard complaints of the injury which the country had sustained from the beggars, who were banished from Dublin last season by the Mendicity association. Many of these wanderers actually laboured under fever, and others probably conveyed contagion from house to house in their clothes; and contagion when so conveyed, is generally supposed to be more active and injurious than when it proceeds from the persons of the infected. This, which is an important consideration in the prevention of fever, may be practically illustrated by the following occurrence which took place in the neighbourhood of Gorey, under the eye of a respectable physician of that town, just before fever became epidemic. A beggar from Limerick obtained admission into a labourer's cabin for herself and a dying child. In five days after she quitted the cabin, fever took place in one of the family, which consisted of the man, his wife and five children; and in succession within a day or two of each other every individual sickened: and two children from a neighbouring cabin who had attended the child's wake, took the same fever within ten days thereafter, and communicated it to their family. The beggar (herself in good health) went to a farmer's house two miles off, and obtained a lodging the night after her child was buried; every individual in that family, a man, his wife, two children and a servant, also took the fever within a few days: these fevers were all severe.

In the parish of Delgany, county of Wicklow, the small farmers and labourers who refused admission to beggars, and who ceased to frequent wakes, escaped the fever, while others of the same class suffered; and some months after a fever had gone through a family in the Wicklow mountains, it was frequently re-introduced by beggars from Dublin.

It is remarkable, that the great increase of fever cases was observed in most parts of the county of Wicklow, in the latter end of the Summer of 1817, when there was every reason to expect a second unproductive harvest; while in Wexford it was not observed

observed until the latter end of 1818, which, if we suppose the disease influenced by scarcity of provisions, may perhaps be explained in the following manner. Wexford being almost entirely a tillage county and requiring a great deal of rain, suffered less by the wet seasons of 1816 and 1817 than any county in Ireland. In the Spring and Summer of 1818, the epidemic could scarcely be said to have extended to Wexford; it certainly prevailed at New Ross on the borders of the county of Waterford; but its existence at that time was not acknowledged by practitioners of medicine in the towns of Enniscorthy, Wexford and Newtown Barry. But the drought of that year caused a very short crop; and consequently the food of the poor, though of a very good quality, for the last five or six months has been both scarce and dear. In the town of Wexford I found potatoes at 7*d.* and 8*d.* a stone; and I understood, while in Tullow, in the county of Carlow, that every market day there were eight or ten cars sent thither from the county of Wexford for potatoes, which were sold at 4*d.* a stone in Tullow.

In many places both in Wexford and Wicklow, an increase of fever cases was observed to follow any diminution of employment; and it was in this way that many intelligent persons accounted for the more frequent occurrence of fever at the period of my inspection, which took place at the *dead* season of the year.

5. The disease, which in the county of Wicklow was at first severe, and often fatal, did not, at the time of my visit, differ from the ordinary continued fever of the country, unless in being milder and shorter; even under the most unfavourable circumstances of hospital accommodation, and under very opposite methods of treatment, during the last eight or nine months the patients almost all recovered. The hospital of Hacketstown was an unfloored room in a waste house from 16 to 18 feet square, unventilated save by the door, chimney, and a hole in the thatch; and so dark that I could not count the patients, who, twenty-seven in number, lay on straw spread on the ground, generally two under one blanket, and crowded so, that there was no perceptible space between them. Yet, out of two hundred fever patients, who had been in this hospital within a few months, not one had died; and notwithstanding the extreme poverty of the inhabitants, and the want of every comfort but fuel, not more than 5 or 6 persons had died of fever in that parish during a period of six months.

In the fever hospitals of the counties of Wicklow and Wexford which I visited, I saw probably two hundred sick, of whom not more than eight or ten appeared to be severely ill, and not more than 3 or 4 of these dangerously; of the latter I rather think all, with one exception, would recover. A physician in Enniscorthy, where, by the way, it was in contemplation to establish a board of health, assured me that he had seen only one instance of the Typhus Gravior since May. I found only one corpse in these hospitals; and in the course of five days travelling I met only one funeral, and that of a person who died of jaundice. The disease was more fatal in the towns than in the country, and among those who underwent fever in their own cabins than among such as went into hospital; yet probably not one in forty died even of the former, during the last eight months. Among the farmers and the higher classes the mortality was heavy, probably about one in three, in all beyond the age of twenty-five.

The disease, which on its first appearance in the county of Wicklow, extended at an average to fourteen days, had of late, in a great majority of cases, terminated in five.

6. In all the towns which I visited in these counties, means had been taken to restrain the progress of fever; the upper classes raised subscriptions and formed committees for the relief of the poor; these committees obtained prompt assistance from Government, without which their benevolent intentions could not have been carried into effect. Fever hospitals were established, and many of the indigent sick were attended at home; in some places money and in others provisions were given to convalescents. In certain districts, as for instance at Rathdrum, inspectors were sent round to detect disease: the sick were conveyed to the hospital, their bedding and furniture were washed, their cabins fumigated and lime-washed, and provided with windows; and constables were stationed on the highways to drive away beggars. These measures seemed to restrain, but they did not suppress the disease.

The injury done by beggars was evident to every observing person. Finger posts were put up in several places, warning them off; and several Catholic clergymen from the altar, denounced the practice of harbouring them. At Baltinglass a board of health was established in December 1818, under the Act of last Session; this board, whose

IV.
LEINSTER.

whose meetings were held once a fortnight, appointed inspectors, circulated printed instructions among the poor, caused the sick to be removed to hospital without delay, their cabins to be whitewashed, their furniture washed, their clothes and bedding disinfected, lending them blankets in the mean while; and at the time of my visit to Baltinglass and Stratford-on-Slaney, they were deliberating on the best means of excluding from their district of nine parishes, all strolling beggars and vagrants. Their plan however was not perfected, and consequently its effects could not be ascertained; however, it had given them a command of money, at a time when their resources were nearly exhausted, and they seemed to expect from it considerable advantages.

7. The tendency to relapse after the fever, which was not great at first, had become so, and was thought to be in an inverse proportion to the duration of the first attack of fever. The five-day fever was generally succeeded by one or two relapses. Fever had also occurred in the same individual, at distant periods, from the same cause which had at first produced it; namely, from communication with those who laboured under the disease.
8. Judging from observations made in the fever hospitals in Dublin, I was prepared to find the constitutions of many of those who had undergone the disease much injured thereby; but this was by no means the case. It was affirmed by all the practitioners of medicine whom I interrogated, that the fever seldom left any *dreg* of disease behind it; and this was confirmed by the looks of the peasantry, whom I saw at work in the fields: there was nothing in their appearance that indicated disease, discontent, or even poverty, unless that their clothes were generally in a bad state.
9. Although the disease in general was mild and short among the poor, yet it had been productive of great misery, from the disposition it had to spread through families, and from its tendency to relapse. A five-day fever is counted by the poor themselves, more infectious than one of longer duration. When fever once got into a cabin, it infected every individual of the family; and relapses so often occurred, that it was seldom eradicated in less than two or three months: by which many an industrious labourer was ruined. And this was not confined to the poorer parts of the country: in the barony of Forth, one of the most prosperous parts of the county of Wexford, many persons who had lived in comfort were so reduced by prolonged sickness, as to be forced to desert their houses and take to the road as beggars. The fever was supposed highly infectious in the cabins of the poor, but it scarce spread in a house where due attention was paid to ventilation and cleanliness; I heard of only one instance in which it spread through a family in the upper ranks.

Carlow, Kilkenny, Queen's County and Kildare.

Counties of
Carlow, Kilkenny,
Queen's County
and Kildare.

1. IN every town in these four counties, in which my inquiries were made, with one exception, I learnt that fever had existed among the poor long before the present epidemic appeared. I am assured by physicians, who have practised for thirty years in Carlow and Kilkenny, the largest towns in this part of the province, that, during all that time, there has been an uninterrupted succession of cases of fever among the poor, in their respective neighbourhoods. The physician to the fever hospital at Naas affirms, that fever has not been absent from that neighbourhood for 18 years. Portarlinton, during 16 years, the period of the senior physician's residence, has never been free from fever. The Roman Catholic clergyman, during 10 years residence in the parish of Tullow, has been called from 40 to 100 times annually, to administer spiritual comforts to persons in fever. It was admitted, however, that fever had, during the last two years, universally prevailed to an extent formerly unknown.

At Castledermot in Carlow, in one or two towns in the Queen's County, in particular at Portarlinton, and among the bogs which lie between the towns of Kildare and Rathangan, there were at the time of my visit rather more cases of fever than there had been in December last. In Castledermot the labouring poor were in miserable circumstances. There were, I was told, at least 200 willing labourers without employment out of 500, the wages of the labourer being only 4*d.* a day with food, and potatoes being 3½*d.* a stone; but here, and at Portarlinton also, the cases were not by one half so numerous as they were last year at the same season. In the hospital near Portarlinton, there were only twenty-seven cases of fever, which, as it accommodated the sick, not merely of the town, but of the populous barony

barony of Portneinch, showed no great extent of disease; and as there was an active board of health in that barony, it is probable that the hospital contained many cases which, had they occurred among the poor of a neglected district, would never have been heard of. In every other part of the four counties, fever was sensibly on the decline; there were not more than two or three cases of fever in Maryboro; in Carlow the physician to the fever hospital considered the epidemic as nearly over; and in Kilkenny there was not more fever than usual at this season.

2. The disease was nearly confined to the poor, among whom fever had prevailed epidemically, during the period above mentioned, in every part of these four counties.
3. A manifest increase of fever cases began to be observed in the Winter of 1816, and ensuing Spring; but in most places fever seems to have become epidemic, about the beginning of Autumn 1817. It was at its height from about the middle of Autumn to the end of the following Winter; at that time also it was most malignant and fatal.
4. Two unproductive seasons in succession had reduced the labouring class to the greatest poverty. Little or no employment could be had by labourers; their clothes were worn out; from the wetness of the weather, turf for fuel could not be saved. Potatoes were wet, scarce and dear. Oats were also scarce and dear. Wheat every where malty; so that when the epidemic began, the poor in many places were living upon weeds. In the neighbourhood of Kilkenny they were feeding on hips, on nettletops and other weeds. Near Stradbally, many families had fed on the tops of the wild turnip*; and at Castledermot this weed (called Prasha Bwee) and a little malty flour, formed the chief articles of nourishment.
5. It is the general opinion, that the disease does not differ from the fever which usually prevails in Ireland. At first there were an unusual number of severe cases, and the fever was in general spotted, but as the epidemic advanced, the cases became milder; and I believe continued fever never was more mild than in the generality of the cases in those parts of the province of Leinster which I have visited: as in Wicklow and Wexford, so in Carlow, Kilkenny, Queen's County and Kildare, it was, in a great majority of instances, a five-day fever, subject to relapses, which scarcely ever occurred in the long fever.
The only place in which the cases were still severe, and the mortality considerable, was Kilkenny; but this I believe arose from dysentery being combined with fever, thereby producing an unmanageable variety of disease.
In the upper ranks the disease has been, throughout the epidemic, malignant and fatal.
6. The means taken by the poor themselves to restrain the ravages of fever, ought to be stated. When any individual of a family was affected with fever, the rest sometimes were so much impressed with the danger of contagion, that they had him removed to a barn or out-house (where they had prepared a bed, and broken a hole in the wall to admit of their handing in medicines, and drink) and locked the door, which was not unlocked till some time after the disease was over. This was not a very common practice. But when a stranger, or a labourer who had no cabin of his own, took the disease, it was quite customary to prepare a shed for him by the way side; this was done by inclining some spars or sticks against a wall or bank of a ditch, and covering them with straw. Under these sheds, which the rain penetrated, the patients lay, on a little straw; and cruel though such treatment may appear, it was found by experience that many more in proportion died in the cabins than in the sheds; indeed some medical practitioners thought so favourably of the sheds, that they recommended them to those who might have remained in their cabins.

Means taken by the Poor themselves, to restrain the ravages of Fever.

In most places there were committees of the more respectable inhabitants formed for the suppression of fever; whose chief objects were, early removal of the sick to fever hospitals, whitewashing and cleansing infected houses, furniture, and bed and body clothes, and supplying convalescents with nourishment; and when their funds admitted of it, they also distributed food at a cheap rate to the poor. In many places

Committee of Inhabitants.

* Brassica Napus.

places the operations of the fever committees could not have been carried on, or must have been prematurely discontinued, had they not obtained assistance from Government.

At Ballitore, a committee of this kind was formed, who explained to the poor, in a series of printed notices, the connection of fever with want of cleanliness and ventilation; instructed them in the most effectual methods of cleansing their houses, furniture, clothes and persons; cautioned them against idly going into infected houses, attending wakes and funerals, and admitting strolling beggars into their houses; and recommended those who had recovered from fever not to go into a neighbour's house, or into any place of public worship for fourteen days thereafter. While they assured the poor that cleanliness and good air would check disease, improve their health and strength, and increase their comforts; they proclaimed to them the maxim which is generally overlooked by charitable associations, namely, that the best directed efforts are unavailing, unless when assisted by the regular and continued exertions of the poor themselves. And acting upon this principle, they declared, that in order to discourage as much as possible that shameful and dangerous disregard of decency and cleanliness, so common among the labouring class, they were unanimously determined only to employ such persons as should keep their cabins clean, whitewashed, provided with a chimney, and with windows hung on hinges, or otherwise capable of admitting fresh air, and the yard or road before their doors free from dunghills or other filth. At Ballitore there was not a case of fever.

At Portarlinton I found a board of health, composed of the gentlemen of the neighbourhood, which embraced the whole barony of Portneinch, and promised to be efficacious, as each member of the board undertook the inspection of the sick on his own property and immediate neighbourhood; taking care to have every case of fever reported to the physicians to the hospital without delay, and that all the necessary measures of disinfection should be practised.

7. Relapses were much more frequent than at the commencement, and during the height of the epidemic, and there were every where instances of the disease having affected the same individual several times; it seemed, however, a general opinion, that persons who had had the disease were less liable to it than others.
8. At Kilkenny the fever had in some instances degenerated into dysentery; but generally speaking, recovery had every where been complete.
9. All ranks and classes of the people believed in the contagion of the epidemic fever; and several instances were related to me, in proof of this opinion, similar to that stated in the report of my first tour of inspection. Thus, in the neighbourhood of Durrow, a woman from Kilkenny, with a sick child, introduced the disease into twelve or fifteen houses, which were her resting places in wandering through that country. Her track for many miles could be traced, by the disease which she left behind her. Near Cuffiesborough, in the same neighbourhood, it was introduced by a strolling beggar, in the same manner. The senior physician to the fever hospital at Portneinch, informed me that the disease occurred in one cottage, five times in the course of twelve months; and during each visitation, almost every individual in the family, inhabiting that cottage, suffered; nor was the disease to be eradicated from amongst them till their cabin was burned. In that neighbourhood five or six cottages were burnt, in order to destroy a latent contagion which resisted all the ordinary means of disinfection.

The nurses and other servants of the different fever hospitals, every where contracted fever, and in many instances the medical attendants also. At Kilkenny the housekeeper, nurses, and most of the servants, had the disease repeatedly during the epidemic; the apothecary and his assistant died of the fever; in short, no person connected with the hospital, escaped, but one of the physicians. It is necessary to state, that the house of industry at Kilkenny had been converted into a fever hospital, for which it was ill suited. The dormitories, which had become fever wards, although clean and cheerful, and not crowded, were not sufficiently ventilated. They had neither chimnies, nor ventilators; and although I have no doubt the windows and doors were generally open, yet this is not enough to secure proper ventilation in a fever ward. It must be admitted, that the disease was contagious in private houses, only when cleanliness and ventilation were neglected or unattainable.

*Westmeath, Longford, and King's County.*IV.
LEINSTER.Counties of
Westmeath, Long-
ford, and King's
County.

1. IN these three counties the epidemic was considered as nearly, if not entirely over, with the exception of two places, namely, Edenderry and Longford. 1st. In Edenderry, from the 1st to the 8th of February 1819, both days inclusive, twelve patients in fever had sent to the dispensary for assistance, five of whom resided at a distance of five miles from the town, and the rest at two, three, and four miles distance.* 2. Longford also was represented to me as in an alarming state; I heard that the fever was in the gaol, and was raging among the poor; but, on visiting that town, I found, in the very crowded gaol, only two persons in fever, and six convalescents, the disease being of the mildest kind. The apothecary in Longford declared the town to be as free from fever as he had ever known it, and not more than two fever patients had applied at the dispensary (the records of which I examined) from the 22d of February to the 8th of March. In Longford the disease had prevailed almost universally in the Winter of 1817; and 21 respectable housekeepers, besides many of the poor, had died of it in a short time, when it was at its height.
2. In every part of these three counties, there had been a remarkable increase of fever, with which a few of the gentry, a good many farmers, and the poor generally, had been affected. It appears that Westmeath had suffered less than any county, with the exception of Wexford, which I have yet visited; yet in many parts of Westmeath scarcely a cabin escaped.
3. It is certain that fever had been epidemic in some neglected parts of the country, for a long time before any unusual extent of disease was suspected in Dublin. In the neighbourhood of Philipstown, the epidemic existed among the poor, for a year before it first attracted general notice in that town, in September 1817. In Edenderry in like manner, it commenced in August 1816; in most places, however, it originated in the beginning of Autumn 1817. It soon attained its greatest height, and is supposed to have been most general, and most severe and fatal, in the latter end of that Autumn, and in the Winter and Spring following. In the Summer of 1818, the mortality from the disease greatly abated; since the end of Summer the disease has been progressively declining.
4. In many parts of these counties there was the same deficiency of wholesome food, of good fuel, and of employment, in 1816 and 1817, as in most other parts of Ireland; almost all the poor near Kinnegad fed on *Prasha*, which they boiled and ate with salt, until subscriptions were entered into, and meal, made of beans and wheat ground together, was sold to them at a low rate. And the scarcity of fuel was such, that even on the borders of the bog of Allen, owing to the long continuance of wet weather, there was not a piece of turf fit to be burned. It deserves to be noticed, that during the failure of the common necessities of life, and general want of employment, the poor conducted themselves with the greatest moderation; there was no clamour nor repining, nor scarce an instance of petty theft.
5. The disease at first was malignant, and generally attended with severe headache and delirium, and spots; but it was considered as differing from the ordinary fever of this country in degree, and not in kind; in Summer it became more mild, and was pretty generally a five-day fever, subject to relapse. Among the poor the disease has been throughout, regular, uniform, and comparatively unattended with danger, requiring no great refinement of treatment; cooling drinks, free air, and purgative medicines, being sufficient to bring it to a favourable issue in 29 cases out of 30. Among the upper ranks, and such as live as the upper ranks do, and have, on the approach of disease, those apprehensions which belong to superior station, the disease has been irregular, complicated, and fatal to one-fourth, or even one-third, under every conceivable treatment.

It is now generally thought that the epidemic has nearly spent itself; but medical practitioners attribute the change in the character of the fever, to the improved condition of the poor. In these three counties I found provisions every where plenty and good; potatoes nowhere more than 3*d.* a stone; in the county of Longford, 2*d.*

or

* In July 1817, when the fever was rife in the neighbourhood, there were, exclusive of country patients, 80 persons in this small town under the care of the physician to the dispensary.

IV.
LEINSTER.

or $2\frac{1}{2}d.$; and there was nearly as much employment for the poor as they usually have at this season of the year.

The influence of epidemic constitution has been less apparent than might be expected, for the fever every where raged where its predisposing causes subsisted; but as soon as cheerfulness, and a greater portion of bodily vigour were restored by renewed employment and wholesome food, it became milder, and then it gradually disappeared. In Mullengar, Longford, Tullamore, and Philipstown, the principal towns in this tour, although there were still a few cases of fever, the epidemic was considered as nearly over. The month of March furnished the hospital at Parsonstown with only ten cases of fever.

6. In these three counties, as in every other place which I have visited, much has been done for the relief of the poor, by subscriptions for the purchase of medicines, wine and food. In Tullamore, the following measures for the suppression of fever were adopted: About the latter end of July 1817, many cases of fever were discovered in the outlets of the town, upon which a board of governors of the King's County Infirmary, assisted by the advice of the physician of the town, established a fever hospital contiguous to the infirmary, to which they removed the infected. Lime was supplied to the poor for whitewashing their houses; nuisances of every kind were removed; all stranger beggars were forced to leave the town, and constables were employed in keeping them away. Finally, inspectors were appointed to examine the suspected houses, which were fumigated and whitewashed with lime freshly slacked; to see that the clothes of the diseased were washed, and their bed clothes exposed to the air, on successive days; that the straw of their beds was burnt, and that they were supplied with fresh straw; to make a return of new cases, as well as report the state of convalescents. These means, doubtless, were highly beneficial, by procuring speedy relief for the sick; and by separating the diseased from the healthy, and disinfecting their houses, the spread of fever was probably checked, but it was not subdued; although as an epidemic it was over, fever was not quite eradicated at the time of my visit, a year and an half after these means of prevention were first adopted.
7. Relapses have been every where frequent since the epidemic began to decline, and they generally follow the short fever; those who have had the fever are considered less liable to it than others.
8. In some few instances the fever was followed by rheumatism, dropsy, and cutaneous eruptions; but persons of a sound constitution have seldom been permanently injured by it. In short, it has not materially deteriorated the constitutions of those who have suffered under it; while it has taught them the value of cleanliness, and the folly and danger of harbouring those idle vagrants who infest the country.
9. Professional men entertain no doubt of the fever being contagious; when the disease was once admitted into a cabin, it generally affected every inmate in succession; to this there was scarcely an exception. In the middling and upper ranks, the medical and clerical visitors of the sick were much more liable to the disease than other persons; all the attendants upon the sick in the hospital of Tullamore had the fever, and two of the nurses died of it. An experienced physician of Parsonstown has known the disease conveyed from an infected mother, by her infant, to the whole family of the hired nurse. So convinced were the poor of the disease being infectious, that their conduct in many places towards itinerants, and in particular itinerant beggars, from being kind and hospitable, had become stern and repulsive; they drove all beggars from their doors, charging them with being the authors of their greatest misfortunes, by spreading disease through the country. The only fact which militates against the contagious nature of the fever, is, its simultaneous appearance in distant parts of the province; but I conceive that this cannot be attributed solely to an epidemic influence, for the seeds of disease were very generally sown, and the causes which promote its growth were every where in active operation.

Upon the activity of the predisposing causes of fever, viz. scarcity of food, and dejection of mind, the early or late appearance of the epidemic seemed chiefly to depend. 1st. When they were in very powerful operation, the epidemic appeared early, the ordinary stock of fever being sufficient quickly to infect the community. 2dly. In places in which they were less operative, disease diffused itself slowly, and
the

the epidemic appeared late. 3dly. Many districts might have escaped altogether, had not the sources of infection been multiplied by diseased itinerants.

IV.
LEINSTER.

Meath and Louth.

Counties of
Meath and
Louth.

1. IN Drogheda, Dundalk, Kells, and Navan, the epidemic was considered as over; there were not as many cases of fever in these towns as are usually to be met with at this season. The senior physician at Drogheda has known that town for upwards of 30 years, during which time it has never been entirely without fever. In some of the small towns there was not a single patient in fever; this was the case in Collon and Slane; 593 cases of fever were attended by the physician to the Slane dispensary, being the 1st July 1817 and 1st July 1818, and only 45 subsequent to the latter date.

At Ardee, in a space of eight miles square, there was only one case of fever known to the surgeon to the Ardee dispensary; the same practitioner having attended nearly 900 patients in fever between the 20th June 1817 and the 20th June 1818.

2. In these two counties the disease chiefly affected the poor, but it was not confined to them.
3. The epidemic appeared in several parts of the counties of Meath and Louth, in the months of May, June, and July 1817; was at its greatest height in the latter end of that year, at which time it was most fatal also, and began to abate in severity and frequency early in Summer 1818.
4. When the epidemic commenced, the poor were labouring under the greatest distress, in consequence of the want of employment, and the scarcity of fuel and provisions, which were of bad quality; hence they were in a state of great despondency. In many places they subsisted chiefly on the coarsest kind of bran, called Pollard, and upon weeds.
5. The prevalent disease was considered by all to be the common continued fever of the country; the disease became shorter and milder before it ceased to be epidemical; at last the five-day fever, with frequent relapses, was very common.
6. In these two counties the same means were adopted for the relief of the poor, as in other parts of the province; committees of the upper ranks met and obtained subscriptions for the purposes of separating the sick from the uninfected, of purifying their persons and houses, and supplying the convalescents with nourishment.
At Drogheda, the county infirmary was converted into a fever hospital while the epidemic lasted. At Dundalk, a board of health was established, consisting of the resident clergy, medical practitioners, and neighbouring gentry; a fever hospital was hired; and great promptitude, zeal and judgment were manifested by the inhabitants, in the measures which were adopted for the relief of the sick. It was the opinion of a respectable practitioner of medicine at Kells, where there are many resident gentry who are uniformly attentive to the interests of the poor, that the fever was less general than it would have been, and than it was elsewhere, owing to the abundant supplies of provisions afforded by the opulent inhabitants of that neighbourhood, to the labouring poor during the time of scarcity. And at Navan it was thought that the soup kitchens, which were established in anticipation of a famine, had been instrumental in keeping down the fever. The poor in these places submitted with admirable patience to all their hardships, which they considered as inevitable, receiving with gratitude the benefits which were conferred upon them by their superiors.
It is worthy of record, that in the county of Louth, the fever disappeared every where shortly after employment was restored to the poor. And the linen trade having acquired a vigour which it had not possessed for several years, the poor were generally employed, and potatoes were cheap and of good quality; and hence perhaps the excellent state of the public health at the time of my inspection of that county.
7. The disease frequently recurred in the same individual, and affected whole families more than once; but most persons believed that those who had had the fever were less liable to it than the unseasoned.

IV.
LEINSTER.

The fever did not produce any permanently bad effect on the constitution.

8. The disease every where extended through the families of the poor ; all who were employed in tending the sick in hospital, were affected with it. It was fatal to a physician and two apothecaries at Dundalk, who attended the fever hospital of that town. In Slane, fever first appeared in a house in which travellers of the poorest description lodge. There was not a case of fever in the town until two strangers from Ardee came to that lodging house, shortly after which fever appeared in the family ; it was then ascertained that the strangers had just recovered from fever, which had raged at Ardee. The second family in which fever appeared, was one between which and that first infected, there was constant communication ; the next individual affected was the physician to the dispensary, who had been visiting in both houses : then the disease became general.

*Dublin.*County of
Dublin.

1. THE *recapitulation* of the general return* of fever patients admitted into the Dublin hospitals, during nineteen months, ending 31st March 1819, which is added to this report, will show the rise, progress, and present decline of the epidemic in the city of Dublin. With some trifling exceptions, fever is on the decline in the county of Dublin.
2. Fever has been general among the poor in all parts of Dublin, but especially in the more crowded and filthy streets, lanes, and courts of the city. The general state of health of the garrison of Dublin, as indeed of the troops all over the kingdom, has been excellent. In most of the large charitable institutions, where food of the usual quality and quantity has been served out, there has been no increase of fever.
3. The epidemic commenced in the city of Dublin, about the 1st of September 1817. It was first observed in Barrack-street, Church-street, and the adjoining lanes. These lanes are in the line of the northern and western roads ; and it was ascertained that fever had been previously spreading in many of the villages, which communicate with Dublin by means of these roads. In some of these villages no increase of disease was observed, until the labourers from Conaught and from some parts of Ulster, came up in 1817, in quest of harvest work. In 1817 they came up in the beginning of July, or even earlier, driven from home by famine. Thus at Kilcock (in which there are sometimes 3,000 labourers at one time from Roscommon and Mayo) no increase of fever was observed among the inhabitants till the latter end of August ; prior to which, however, many cases of fever were observed among the Conaught labourers, who lodged in the cabins around Kilcock. Many of the inhabitants of Dunbayne, Maynooth, and Swords, (all stations for labourers from Roscommon, Mayo, Leitrim, Sligo, Cavan, and Monaghan) who laboured under fever in the month of September, when they understood the nature of their illness, had themselves conveyed into Dublin, and took up their abode in Barrack-street, Church-street, &c. in hopes of getting into an hospital ; and thus they introduced disease into these streets, which has maintained its ground in them ever since. Fever prevailed among the county of Dublin mountains, above Stepaside and about Kilgobbin and Kilternan, in the end of 1816, at which time hardly a cabin escaped.
4. The condition of that part of the community which suffered most in Dublin, will appear from a Report made to the governors of the House of Industry, by their inspectors, of the state of Barrack-street and Church-street ; the streets which supplied the hospitals of the house of industry with the greatest number of fever patients, during the months of September, October, November, and December 1817.
- “ Barrack-street and Church-street are on the north side of the Liffey, and in the line of the northern and western roads. Barrack-street is nearly parallel with the Liffey, between which and its eastern extremity are yards for cattle and slaughter-houses : the river at high water is nearly on a level with the cellars. In Barrack-street there are 85 houses, the apartments of which are in general much crowded ; thus 52 houses contain in 390 apartments, 1,318 persons ; of which number 332 adults are unemployed : the greater number of whom are in a state of extreme indigence. There are several

* The return was presented to Government by the Director-General of Military Hospitals.

IV.
LEINSTER.

several public houses, which are much frequented, particularly in the evenings; and many of the cellars are used as public eating rooms. Soldiers and their followers have hitherto afforded means of subsistence to many room-keepers, who are now in great distress. During the last three months 111 persons have had fever, which appears in general to have arisen from contagion. Church-street consists of 181 houses, which, with those in the adjoining courts, are much more crowded than the houses of Barrack-street; thus, in 71 houses of this street and adjoining courts, consisting of 393 apartments, 1,997 persons dwell; of whom 628 are without employment. In Church-street, 123 persons have had fever within the last three months. Foul lanes, courts and yards, are interposed between this and the adjoining streets. A few respectable shopkeepers excepted, the entire street is inhabited by persons of the lowest order. There are many cellars which have no light but from the door, which in several is nearly closed by bundles of rags, vegetables, and other articles exposed to sale. In some of these cellars the inhabitants sleep on the floors, which are all earthen; but in general they have bedsteads. Most of the courts are crowded and filthy. Nicholson's court, which immediately joins the root market, contains 151 persons in 28 small apartments, of whom 89 are unemployed; their state is very miserable, there being only two bedsteads and two blankets in the whole court. Fever appeared in three apartments of this court; in one the whole family were sick, the individual first affected not having been removed; in the others only two persons were taken ill, owing to early removal and cleansing. The effect of early removal of the sick, and the cleansing and whitewashing of their apartments, was very remarkable in checking the progress of the disease in some families; while, from the neglect of these precautions, the number of the sick rapidly increased in others. Two neighbouring houses in Barrack-street, afforded an illustration of this remark, namely, Nos. 41 and 47. In the former the disease began in two different families, and its progress was immediately checked by early removal, cleansing, &c. In the latter, the individual first affected remained at home, and died of the fever, but not before he had communicated the disease to eighteen persons in a short time."

Bad state of Barrack-street and Church-street. Soldiers and their followers.

Courts.

Cellars.

The epidemic was of later appearance in Dublin than in most parts of Ireland, which was probably attributable to provisions being of better quality and more abundant than elsewhere; perhaps something was also due to the exertions of the inhabitants who met at the mansion-house, and subscribed largely for the purpose of giving employment to the labouring poor.

5. The disease has been the same which is generally observed in Dublin; nor has any change in its character taken place, unless what may be accounted for by the change of seasons. Although the hospitals are now less crowded than they were, the cases are as severe as at any time since the epidemic commenced; and there were lately several cases of a malignant kind among the upper ranks.

6. Hospital accommodation at the expense of Government, has been afforded to all applicants, labouring under fever, in the city of Dublin; and of late, wholesome food has been supplied to convalescents for some time after their discharge from hospital. The several fever establishments having medical inspectors, whitewashers, &c. attached to them, have become each the centre of a district; the sick being for the most part accommodated in the hospital of the district in which they reside. Numerous scavengers paid by the governors of the house of industry, have been employed to remove filth from the areas, courts, and even houses of the poor, whereby all the poorer parts of the city are cleansed once a fortnight. Lastly, a committee of health, consisting of a governor and physician, deputed from each of the fever hospitals, has been appointed to promote concert in the operations of these establishments, and watch over the progress of epidemic disease.

The important communications which have been made to his Excellency the Lord Lieutenant, by the governors and physicians of the different town hospitals, as well as by the central committee of health, render it unnecessary for me to dwell upon this part of the subject, which however I cannot dismiss without remarking, that an association, consisting of many benevolent individuals of St. Peter's parish, by instituting a system of minute inspection, followed by early removal of the sick to hospital, and careful purification of their houses, diminished for a time, the number of cases of fever in that parish. Their plan was rendered more efficient by the establishment of a disinfecting house, furnished with boilers and ovens for cleansing the clothes and bedding of the poor, by washing and stoving, as also by supporting those who had

Association of benevolent individuals in St. Peter's Parish.

been

IV.
LEINSTER.

been in hospital, until they were fully restored to strength, whereby the danger of relapse was much diminished.

7. Relapses have been frequent, particularly in such patients as from having had short fevers were early discharged from hospital, or who insisted upon leaving hospital before they were fit for work. It is thought that relapses have been less frequent since nourishment began to be distributed to the convalescents, from the kitchens of the several hospitals.
8. The fever has been frequently followed by dysentery, dropsy, rheumatism, and, in the pre-disposed, by consumption; it has been much more injurious in its consequences in Dublin, than in the country.
9. I believe there is not a physician or medical inspector, belonging to the fever hospitals in Dublin, who entertains a doubt of the infectious nature of the disease. In the hospitals of the house of industry there were till lately 170 persons engaged in tending the fever patients; from which part of the establishment, within the last eighteen months, have been furnished 198 cases of fever. No clinical clerk, apothecary, or unseasoned nurse or servant, has escaped, and some have had the fever three or four times.* Similar observations have been made in the other hospitals; yet I have not heard of one instance of a second individual of a family, in the upper ranks in Dublin, being affected with the epidemic fever, such security do cleanliness and ventilation afford.

*Summary of the Observations made during the foregoing Inspection of the
Province of Leinster.*

1. IT appears that continued fever has existed among the poor of the province of Leinster, for many years.
2. That in 1817, but more especially towards the close of that year, there was a great scarcity of wholesome food (in many parts amounting to a famine) and also of fuel; that the clothes of the poor were worn out; and that many of them were in a state of dejection of mind, from these hardships and from a general failure of employment.
3. That at this period the common continued fever of the country became epidemical among the poor; that at first it raged with severity, in some places carrying off considerable numbers; that it began to abate in severity about the middle of Summer 1818; since which time, that it has almost every where become less frequent also, so that in general it has ceased to be epidemical; that since it began to abate in severity, its course has been much shortened, but with a proportionate tendency to relapse.
4. That the disease has spread through families in which ventilation or cleanliness were neglected or unattainable; that it has been conveyed from one cabin to another by the friendly visitors of the sick; that it has been more widely disseminated by strolling beggars and labourers traversing the country in quest of employment; lastly, that the unseasoned servants of fever hospitals have, with scarce an exception, contracted the disease.
5. That in the upper ranks comparatively few have caught the fever, and of these a large proportion have been medical and clinical attendants upon the sick; that during the whole course of the epidemic, fever has been fatal in a proportion of one in four, or even one in three, among those affected with it in the upper or middling ranks, even while not one in thirty or forty died among the poor; that the disease has seldom if ever spread through families in which proper attention has been paid to ventilation and cleanliness.
6. Finally; that the disease has been most destructive in those parts of the country, where the poor have least intercourse with the rich.

Concluding

* Dr. Macloghlin, a learned and scientific physician, died last night of fever, which there is every reason to think he caught in the exercise of his office of inspector.—April 8th, 1819.

*Concluding Observations.*IV.
LEINSTER.

THUS I have endeavoured to ascertain, by inquiry made on the spot, the exact state of Fever throughout the province of Leinster. The Lord Lieutenant has been further pleased to command me to submit in detail, for his Excellency's consideration, such medical or preventive measures as may prove the means, not only of relieving the persons afflicted with contagious fever, but of checking its future progress in their dwellings: on these measures, however, I fear I have nothing new to offer; indeed I know little of this part of the subject but its difficulties.

Various plans have been formed by benevolent persons with whom I have conversed, for the complete extinction of fever in Ireland; most of which plans concur in two points: namely, in the general establishment of fever hospitals, and of boards of health.

The general establishment of fever hospitals is entitled to more consideration than has been bestowed upon it: the following are some of the objections to which it appears liable. The multiplication of hospitals in the country would afford the rich but too plausible an excuse for neglecting the indigent sick. By furnishing the poor with a ready asylum in their sickness, these institutions would have a tendency to make them even less provident than they are; while at the same time they would still farther weaken that spirit of independence which ought to be encouraged in the poor of this country. Lastly, to meet an occasional evil, a permanent expense would be entailed upon the districts in which such hospitals should be established. Fever hospitals in large towns, under the superintendence of active, intelligent, and zealous governors, are admirable institutions, adding much to the security and comfort of the opulent; and, in the present crowded state of the dwellings of the poor, materially checking the progress of disease. But in the country parts of Ireland, I should apprehend, in addition to the objections already stated, that permanent establishments of this kind, although at first they might be given to such medical practitioners as have distinguished themselves by their humane and disinterested attention to the poor, and although their discipline for a time might be exact, would eventually, when zeal became cold, be liable to the same abuses which have crept into similar institutions in many parts of Ireland. It seems better that these establishments in the country should be provisional. Temporary fever hospitals, to meet an exigency such as that which providentially is now nearly over, might be erected in a few days, at a trifling expense. I have an estimate in my possession for a fever hospital, which it was in contemplation to build at Ballytore, for the accommodation of 15 or 16 patients; which estimate amounts to £.48. 6s., whereas a permanent hospital for the same number of patients would probably have cost nearly a thousand pounds; and now that there is not a single case of fever in that town, it would have been empty and neglected, in which case it would soon have become ruinous. In Wexford I saw 20 patients in a shed, which answered all the purposes of a fever hospital, and which cost only £.50. Perhaps some of the existing establishments, such as the county infirmaries, might, during the pressure of epidemic disease, be converted into fever hospitals; and the well-known fact, that, during the existence of an epidemic, all other diseases are comparatively rare, would sanction this occasional appropriation of these institutions to a purpose for which they were not originally intended.

Had the epidemic been confined to one town, barony, or even county, it is probable that it might have been subdued; but I suspect that nothing short of the means employed for putting down the Plague, would have accomplished its subjugation. Ample hospital accommodation, a complete organization of medical police, with a cordon of armed constables or troops to cut off all communication between the district in question and the surrounding country, would have been necessary. Whether these means, involving great expense in an exhausted country, and probably rendering the supply of provisions still more difficult than it actually was, would have been advisable, it is for others to determine. But in the present instance disease was universal, and the wildest speculator could scarcely expect a simultaneous movement in every part of the kingdom, with a view of subduing it; nay, had the disease been a mortal plague instead of a mild fever, such a concurrent exertion could not have been obtained. For it is obvious, that the only sure foundation for such a movement, namely, an intelligent Board of Health, with all the apparatus of hospitals, convalescent and disinfecting houses, &c. however practicable at Wexford, Tullamore, Portarlington or Kells, or where there are many independent and benevolent persons, and however useful it might prove in these places, was inapplicable to those parts of the country in which

IV.
LEINSTER.*Ravages of fever
where the poor were
supine.*

the epidemic was most destructive, from there being no residents of authority, and not sufficient information in these districts to carry it into effect. Fever obviously committed its greatest ravages where the poor were supine, from the absence of persons of superior rank to protect and encourage them during the season of their calamity; while, on the other hand, it did not ravage those districts where that duty was performed by residents of character and independence: the want of such persons, however, unfortunately was much felt during the late crisis, in many parts of the province of Leinster.

I believe that every attempt made to suppress disease, however incomplete, was of use; was useful, not merely by instructing the poor in the nature of the difficulty with which they had to struggle, and showing them how to contend against it; but moreover by making them feel that they were objects of sympathy, they were encouraged to resist an evil which always grows by neglect.

Indeed, were these associations for the relief of the poor when in sickness, permanently established in places which could not maintain a Board of Health, they would do more towards restraining the spread of disease, than any measure which has been suggested. The individuals composing them would become familiar with the miseries of the poor; and when any unusual sickness should again occur, then experience in the work of charity would enable them to apply the proper remedies with a prompt and skilful hand. For it is certain, that the poor in some places were left to struggle with their misfortunes, unaided by their superiors, not from an unwillingness on the part of the latter to assist them, for the spirit every where was excellent, but from ignorance of any effectual method of doing so.

Were such associations general, they would go far towards supplying one of the greatest *desiderata* in this country, namely, a more frequent intercourse between the upper ranks and the poor. The individuals composing these societies must, however, be connected by no tie but charity. Such societies having no subordinate officers, as clerks, inspectors, &c. but doing their work themselves. No measures would be more useful and certainly more popular in most parts of this country, than associations which have the sanction of law; and it is a strong recommendation of them, that they lately existed in many places and were productive of great advantages. All that is desired, is to convert a temporary and partial into a permanent and general benefit.

In order to give efficiency to these associations, it would be necessary to establish a Board of Health in Dublin, to which they might apply for advice and assistance, when difficulties should arise; which unassisted, they might find themselves unable to overcome. By means of a Board of Health corresponding with those associations, with the clergy, magistrates and physicians, in different parts of Ireland, Government might obtain the earliest information relative to every occurrence tending to injure the health of the community, whereby preventive or remedial means would be provided without delay. The establishment of a Board of Health might also lay the foundation of a general system of medical police, which would probably lead to an increase of the comforts of the poor.

I would not presume to bring the foregoing proposal under the consideration of his Excellency the Lord Lieutenant, had it not been sanctioned by the approbation of some professional gentlemen, who have bestowed much attention on the health of the poor, and on whose judgment I place every reliance.

A record of the inspection of this kingdom, by which the rise, progress, and present state of disease has been ascertained, will form an official document of great value. It will illustrate the laws of epidemics, as well as the measures which may be employed for alleviating the miseries which they occasion. Epidemics of the same kind have, from time to time, occurred in Ireland from the same cause,* namely, a failure of the usual supply of nourishment; which in many places were equally fatal with that under consideration, but these were not sufficiently attended to, and are now forgotten; so that when, on the present occasion, disease arose and became general, we were ignorant of the course which it was likely to pursue. The assistance humanely afforded to a suffering people, by his Excellency's commands, is also upon record; and should this country again fall under a similar visitation, in distributing the bounty of Government, the advantage of experience will be superadded to just principles.

J. Cheyne.

* One within these twenty years.

APPENDIX.

IV.
LEINSTER.

DUBLIN.

Patients admitted into the Hardwicke Fever Hospital, House of Industry, and the Fever Hospital, Cork-street; from the year 1804, when they were established, to September 1st, 1817.

					Hardwicke Hospital. N ^o Admitted.	Cork-street Hospital. N ^o Admitted.
In the year	-	-	1804	-	82	422
—	-	-	1805	-	709	1,028
—	-	-	1806	-	1,276	1,272
—	-	-	1807	-	1,289	1,092
—	-	-	1808	-	1,473	1,072
—	-	-	1809	-	1,176	1,076
—	-	-	1810	-	1,474	1,774
—	-	-	1811	-	1,316	1,478
—	-	-	1812	-	2,006	2,273
—	-	-	1813	-	1,870	2,620
—	-	-	1814	-	2,026	2,398
—	-	-	1815	-	2,451	3,787
—	-	-	1816	-	1,669	2,785
to September 1,	-	-	1817	-	923	1,865

General Recapitulation of Fever Patients admitted into the Dublin Hospitals, during 18 Months, commencing 1st September 1817, and ending 28th of February 1819; divided into Periods of Three Months.

First Period :

Total of Admissions during three months, ending 30th November 1817 - 2,752

Total number of Deaths in ditto - - - - - 168

Mortality somewhat below one in 16;

Average daily Admissions somewhat more than 30.

Second Period :

Total of Admissions during three months, ending 28th February 1818 - 4,344

Total number of Deaths in ditto - - - - - 288

Mortality somewhat below one in 15;

Average daily Admissions somewhat more than 48.

Third Period :

Total of Admissions during three months, ending 31st May 1818 - 5,297

Total number of Deaths in ditto - - - - - 221

Mortality somewhat above one in 24;

Average daily Admissions nearly 58.

Fourth Period :

Total of Admissions during three months, ending 31st August 1818 - 7,377

Total number of Deaths in ditto - - - - - 226

Mortality somewhat below one in 32;

Average daily Admissions somewhat more than 80.

Fifth Period :

Total of Admissions during three months, ending 30th November 1818 - 8,611

Total number of Deaths in ditto - - - - - 350

Mortality one in 22 nearly :

Average daily Admissions upwards of 94 $\frac{1}{2}$.

Sixth Period :

Total of Admissions during three months, ending 28th February 1819 - 6,870

Total number of Deaths in ditto - - - - - 365

Mortality about one in 19;

Average daily Admissions somewhat more than 76.

IV.
LEINSTER.

Return of Fever Patients admitted into the Dublin Fever Hospitals ; for one Month, commencing the 1st, and ending the 31st of March 1819, both days inclusive.

House of Industry :

Patients in hospital, 28th February 1819	-	-	-	-	501
Admitted from 1st to 31st March 1819	{	City	643	}	-
		Country	112	}	-
					755
					1256
Discharged cured	-	-	-	-	756
Died	-	-	-	-	53
In hospitals, 31st March 1819	-	-	-	-	447
Mortality, one in 14.					

House of Recovery, Cork Street :

Patients in hospital, 28th February 1819	-	-	-	-	203
Admissions from 1st to 31st March	-	-	-	-	496
					699
Discharged cured	-	-	-	-	464
Died	-	-	-	-	25
In hospital, 31st March 1819	-	-	-	-	210
Mortality, one in 20.					

STEEVENS'S Hospital :

Patients in hospital, 28th February 1819	-	-	-	-	76
Admissions from 1st to 31st March	-	-	-	-	223
					299
Discharged cured	-	-	-	-	219
Died	-	-	-	-	4
In hospital, 31st March 1819	-	-	-	-	76
Mortality, one in 56.					

Sir P. DUNN'S Hospital :

Patients in hospital, 28th February 1819	-	-	-	-	88
Admissions from 1st to 31st March 1819	-	-	-	-	200
					288
Discharged cured	-	-	-	-	175
Died	-	-	-	-	13
In hospital, 31st March 1819	-	-	-	-	100
Mortality, one in 15.					

WHITWORTH Hospital :

Patients in hospital, 28th February 1819	-	-	-	-	30
Admissions from 1st to 31st March 1819	-	-	-	-	28
					58
Discharged cured	-	-	-	-	32
Died	-	-	-	-	3
In hospital, 31st March 1819	-	-	-	-	23
Mortality, one in 9.					

Recapitulation :

Total of admissions during the months ending 31st March 1819	1,702
Total number of deaths in ditto	98
Mortality, one in $17\frac{1}{3}$.—Average daily admissions, 58.	

Note.—In order to institute an accurate comparison of the admissions of fever patients into the Dublin hospitals, for the months of February and March 1819, we must add three days to the former month, to make the total number of days alike ; namely, 31. Taking, therefore, the daily admissions at 58, we add three times that number, namely, 174, to 1,684, the total of admissions during February 1819, which forms a total, 1,858, or 156 more than the admissions during March 1819.

Return

Return of Fever Patients admitted into the DUBLIN Hospitals; for one Month, commencing the 1st, and ending the 30th of April 1819, both days inclusive.

IV.
I. EINSTER.

House of Industry :

Patients in hospital, 31st March	-	-	-	-	-	447
Admissions from 1st to 30th April	{City	-	372}	-	-	459
	{County	-	87}	-	-	906
Discharged cured	-	-	-	-	621	
Died	-	-	-	-	37	
In hospital, 30th April	-	-	-	-	248	906
Mortality, about one in 12½.						

House of Recovery, Cork Street :

Patients in hospital, 31st March	-	-	-	-	-	210
Admissions from 1st to 30th April	-	-	-	-	-	404
						614
Discharged cured	-	-	-	-	406	
Died	-	-	-	-	23	
In hospital, 30th April	-	-	-	-	185	614
Mortality, about one in 18.						

STEEVENS'S Hospital :

Patients in hospital, 31st March	-	-	-	-	-	76
Admissions from 1st to 30th April	-	-	-	-	-	212
						288
Discharged cured	-	-	-	-	198	
Died	-	-	-	-	11	
In hospital, 30th April	-	-	-	-	79	288
Mortality, one in 19.						

Sir PATRICK DUNN'S Hospital :

Patients in hospital, 31st March	-	-	-	-	-	100
Admissions from 1st to 30th April	-	-	-	-	-	207
						307
Discharged cured	-	-	-	-	193	
Died	-	-	-	-	11	
In hospital, 30th April	-	-	-	-	103	307
Mortality, about one in 19.						

WHITWORTH Hospital, Drumcondra :

Patients in hospital, 31st March	-	-	-	-	-	23
Admissions from 1st to 30th April	-	-	-	-	-	29
						52
Discharged cured	-	-	-	-	35	
Died	-	-	-	-	2	
In hospital, 30th April	-	-	-	-	15	52
Mortality, about one in 15.						

Recapitulation :

Total of admissions during the month ended 30th April 1819	-	1,311
Total number of deaths in ditto	-	84
Mortality, about one in 16.—Average daily admissions, about 44.		

Note.—In order to institute an accurate comparison of the admissions of fever patients into the Dublin hospitals, for the months of March and April 1819, we must add one day to the latter month to make the total number of days alike; namely, 31. Taking, therefore, the daily admissions at 44, we add that number to 1,311, the total of admissions during April 1819, forms a total of 1,355, or 347 less than the admissions during March 1819.

Right Hon. Charles Grant,
&c. &c. &c.

G. Renny, M. D.

1817.				1818.			
DATE.	Ad-missions.	Dis-charges.	Deaths.	DATE.	Ad-missions.	Dis-charges.	Deaths.
May - -	2	2	—	April - -	26	24	—
„ June - -	7	5	—	„ May - -	33	32	—
„ July - -	8	8	—	„ June - -	28	34	—
„ August -	13	12	—	„ July - -	26	25	—
„ September	10	10	—	„ * August -	57	57	—
„ October -	16	12	1	„ September	18	19	—
„ November	12	14	1	„ October -	37	25	—
„ December	14	12	—	„ November -	68	65	3
1818. January -	49	39	1	„ December -	54	37	2
„ February -	33	31	1	1819. January -	79	56	2
„ March -	31	32	1	„ February -	39	42	5
50 patients in hospital 26 February 1819.				TOTAL - 660 593 17			

During this present month (February 1819) the cases of fever that have occurred are generally of a more malignant sort than usual, as may be inferred by the number of deaths.

Patients received into hospital, from July 1817 to 28th February 1818,	}	204
from the parishes of Delgany and Newtown Mount Kenedy -		
Deaths - - - - -		6
From 1st of March 1818, to 15th February 1819 - - - -		153
Deaths - - - - -		10
In hospital 16th February 1819 - - - - -		11

Patients received into hospital from 6th September 1818, to	}	203
1st February 1819 - - - - -		
Deaths - - - - -		5

Hospital discontinued for want of funds.

Admitted from August 12th, 1818, to February 16th, 1819	-	-	350
Died	-	-	4
In hospital	-	-	* 18

A Return of the Fever Hospital, at BRAY, County Wicklow; from its first establishment on the 18th of September 1818, to the 8th April 1819.

[illegible]

Fever Hospital, ARKLOW, County Wicklow.

Admitted in	Patients.	Admitted in	Patients.	Admitted in	Patients.
1818. January -	7	1818. July - -	12	1819. January -	19
„ February -	5	„ August - -	13	„ February -	21
„ March -	4	„ September -	18	„ March -	16
„ April -	5	„ October -	25	to 8th April -	4
„ May -	12	„ November -	23		
„ June -	9	„ December -	26	Total - -	219

Discharged cured, 212. Died, 1. In hospital 8 April, 6.

Dispensary, NEWTOWN BARRY, County Wexford:

From February 1818 to February 28, 1819 - - - - 91 Patients.
Died - - - - - 1

Dispensary ENNISCORTHY, County Wexford:

From February 1818 to February 17th, 1819 - - 434 Patients.

Recovered - - - - - 431 —
Died - - - - - 3 —
Under cure - - - - - 36 —

Fever Hospital, GOREY, County Wexford:

Date.	Admitted.	Died.	Date.	Admitted.	Died.	Date.	Admitted.	Died.
1817. November	4	—	1818. April - -	6	1	1818. September	17	—
December	16	—	May - -	31	1	October -	16	—
1818. January -	17	—	June - -	23	—	November	16	—
February	14	—	July - -	16	1	December	14	1
March -	6	—	August -	16	—	1819. January -	25	—

237 Admitted. 4 Died. 214 Discharged. 18 In hospital.

Fever Hospital, WEXFORD:

	Admitted.	Discharged.	Died.
1815. December - - - -	8	8	—
1816. From January to March - - - -	28	19	2
„ „ „ April to June 30th - - - -	17	18	1
„ „ „ July to September 30th - - - -	9	13	—
„ „ „ October to December 31st - - - -	11	10	1
1817 - - - January to March 31st - - - -	16	16	1
„ „ „ April to June 30th - - - -	27	19	—
„ „ „ July to September 30th - - - -	22	28	—
„ „ „ October to December 31st - - - -	25	24	—
1818 - - - January to March 31st - - - -	36	27	2
„ „ „ April to June 30th - - - -	35	35	1
„ „ „ July to September 30th - - - -	97	75	1
„ „ „ October to December 31st - - - -	90	78	4
1819 - - - January to February 28th - - - -	76	79	3
Total - - - -	497	449	16

IV.

LEINSTER.

Fever Hospital, New Ross.

							Admitted.	Discharged.	Died.
From July 1st 1809 to July 1810	-	-	-	-	-	-	28	24	2
- - - 1810 - - 1811	-	-	-	-	-	-	81	75	5
- - - 1811 - - 1812	-	-	-	-	-	-	39	40	1
- - - 1812 - - 1813	-	-	-	-	-	-	39	36	3
- - - 1813 - - 1814	-	-	-	-	-	-	44	40	3
- - - 1814 - - 1815	-	-	-	-	-	-	107	97	3
- - - 1815 - - 1816	-	-	-	-	-	-	76	80	3
- - - 1816 - - 1817	-	-	-	-	-	-	174	161	—
- - - 1817 - - 1818	-	-	-	-	-	-	317	270	6
Total	-	-	-	-	-	-	905	823	26

Fever Hospital, New Ross—continued.

Remaining under Cure :						Patients.	Admitted during Month.	Discharged cured.	Died.
July 1st	-	1818	-	-	-	51	95	73	1
August	-	"	-	-	-	72	87	91	1
September	-	"	-	-	-	67	82	79	—
October	-	"	-	-	-	70	86	91	—
November	-	"	-	-	-	65	65	68	1
December	-	"	-	-	-	61	46	62	1
January	-	1819	-	-	-	44	44	56	—
February	-	"	-	-	-	32	47	42	1
March	-	"	-	-	-	36	—	—	—
TOTAL	-	-	-	-	-	498	552	562	5

Tabular View of the Admissions and Deaths of the Fever Hospital, KILKENNY; commencing the 1st of March 1803, and ending the 1st of March 1816.

For One Year, from the 1st of March						ADMISSIONS:			DEATHS:		
						Males.	Females.	TOTAL	Males.	Females.	TOTAL.
1803	-	to 1st March	-	1804		39	34	73	2	2	4
1804	-	"	-	1805		43	37	80	6	4	10
1805	-	"	-	1806		35	34	69	3	2	5
1806	-	"	-	1807		23	33	56	1	1	2
1807	-	"	-	1808		40	41	81	2	3	5
1808	-	"	-	1809		39	57	96	2	3	5
1809	-	"	-	1810		54	62	116	4	3	7
1810	-	"	-	1811		64	71	135	5	6	11
1811	-	"	-	1812		66	87	153	1	5	6
1812	-	"	-	1813		78	78	156	2	3	5
1813	-	"	-	1814		79	104	183	2	2	4
1814	-	"	-	1815		112	124	236	8	5	13
1815	-	"	-	1816		119	130	249	5	7	12
1816	-	"	-	1817		85	77	162	11	6	17
TOTAL	-	-	-	-	-	876	969	1,845	54	52	106

Quarterly Return of the Fever Hospital, KILKENNY; from the 1st March 1817, to 1st March 1819.

IV.
LEINSTER.

For three Months from	ADMISSIONS:			DEATHS:		
	Males.	Females.	TOTAL.	Males.	Females.	TOTAL.
1st March to 1st June - 1817	46	50	96	1	3	4
" June " September "	78	75	153	9	6	15
" Sept. " December "	180	199	379	13	7	20
" Dec. " March - 1818	210	262	472	11	6	17
" March " June - "	233	297	530	19	14	33
" June " September "	294	303	597	16	14	30
" Sept. " December "	258	207	465	21	21	42
" Dec. " March - 1819	171	161	332	20	13	33
TOTAL - -	1,470	1,554	3,024	110	84	194

RECAPITULATION:

	Males.	Females.
Total number of Patients admitted, from 1st March 1803 to 1st March 1817 - - - - -	876	969
Total number of Patients admitted, from 1st of March 1817 to 1st March 1819 - - - - -	1,470	1,554
Grand Total - -	2,346	2,523

Total Males and Females - - 4,869

Total number of Deaths, from the 1st March 1803 to 1st March 1817 - - - - -	54	52
Total number of Deaths, from the 1st March 1817 to 1st March 1819 - - - - -	110	84
Grand Total - -	164	136

Total Males and Females - - 300.

Average mortality of Males, one in $14\frac{1}{3}$ nearly, }
Average mortality of Females, one in 18 nearly. } - General Average as 1 to $16\frac{1}{3}$.

Report of the Fever Hospital in the Barony of PORTNEHINCH in the Queen's County; from 25th July 1818, to 28th February 1819.

MONTH.	Admitted.	Dis-charged.	Died.	MONTH.	Admitted.	Dis-charged.	Died.
1818. July 25 - -	20	—	—	1818. December -	76	79	3
August 31 - -	27	19	1	1819. January 31	56	63	1
Sept. 30 - -	86	70	1	February 28	40	35	3
October 31 - -	102	82	5				
Nov. 30 - -	108	122	2				
Remaining under Treatment - -	29			TOTAL - - -	515	470	16

KILCULLEN Fever Hospital, County of Kildare:

Patients admitted from 1st March to 1st June 1818 - - 74; Died - - —
Patients admitted from 1st June to 1st September 1818 - 131; Died - - 3
Patients admitted from 1st Septem' to 1st Decem' 1818 - 122; Died - - 1
Patients admitted from 1st Dec. 1818 to 1st March 1819 - 93; Died - - 1
Total admitted, 420. Died, 5. Remaining in hospital, 26.

Report of the NAAS Fever Hospital, County of Kildare:

Admitted from 10th March 1818 to 10th March 1819 - - 427
Discharged cured 400; Died 13; In Hospital 14; - - TOTAL 427
Of the deaths five were Conaught men, who had been lying in the fields under the ditches for many days previous to admission, at which time they were in a dying state.

IV.
LEINSTER.

Return of the Fever Hospital TULLAMORE, King's County :

Admitted from 13th July 1817 to 31st July 1818	-	-	237
Died - - - - -	-	-	12
Admitted from 31st July 1818 to 5th March 1819	-	-	140
Died - - - - -	-	-	4
Remaining in hospital, of whom 9 are convalescent.			

Return of PARSONS-TOWN Fever Hospital, King's County; from 21st August 1817 to 28th February 1819.

	Admitted.	Discharged.	Died.
From 21st August to 1st October - - - 1817	32	16	—
1st October - - November - - - —	26	23	1
November - December - - - —	30	17	1
December - January - - - 1818	25	18	2
January - - February - - - —	24	27	1
February - March - - - —	24	29	2
March - - April - - - —	19	17	2
April - - May - - - —	20	21	5
May - - June - - - —	27	21	2
June - - July - - - —	27	16	—
July - - August - - - —	42	36	—
August - - September - - - —	20	21	—
September - October - - - —	27	35	—
October - - November - - - —	28	24	—
November - December - - - —	22	24	—
December - January - - - 1819	11	17	1
January - - February - - - —	15	12	—
February - - March - - - —	6	18	1
TOTAL - - -	425	392	18

KING'S COUNTY.

Return of Extern Patients, under Medical Treatment; from 21st August 1817 to 28th February 1818; Parsons-town.

	Under Treatment.	Cured.	Died.
From 21st August to 1st October - - - 1817	24	18	—
1st October to 1st November - - - —	22	14	1
November - December - - - —	36	14	—
December - January - - - 1818	24	23	2
January - - February - - - —	17	22	—
February - March - - - —	22	23	—
March - - April - - - —	26	19	—
April - - May - - - —	28	29	—
May - - June - - - —	18	26	—
June - - July - - - —	19	24	—
July - - August - - - —	30	28	—
August - - September - - - —	15	19	—
September - October - - - —	12	16	—
October - - November - - - —	12	7	—
November - December - - - —	7	15	—
December - January - - - 1819	4	12	—
January - - February - - - —	7	11	—
February - - March - - - —	1	1	—
TOTAL - - -	324	321	3

Dispensary, KILLUCAN, County Westmeath.

Month.	Admitted.	Died.	Month.	Admitted.	Died.	Month.	Admitted.	Died.
1817. August 27	10	—	April - 1818	61	1	October 1818	10	—
September	21	—	May - —	33	—	November —	26	—
October -	40	—	June - —	45	1	December —	15	1
November	28	1	July - —	34	—	January 1819	6	—
1818. January -	30	—	August —	18	—	February —	—	—
February	35	1	September —	5	—	March - —	10	—
TOTAL - -							427	5

Report of the Fever Hospital, KILLS, County Meath; from 19th September 1817,
to 30th March 1819.

DATE.		Admission.	Discharge.	Deaths.
1817.	From 19th September to 18th October - -	50	29	1
—	— 19th October to 18th November - -	31	36	—
—	— 19th November - - December - -	29	24	—
1818.	— December - - January - -	20	17	1
—	— January - - February - -	14	20	—
—	— February - - March - -	13	5	—
—	— March - - April - -	10	14	—
—	— April - - May - -	19	20	—
—	— May - - June - -	27	27	1
—	— June - - July - -	26	22	—
—	— July - - August - -	28	27	—
—	— August - - September - -	30	30	3
—	— September - - October - -	25	25	1
—	— October - - November - -	20	20	3
—	— November - - December - -	14	17	—
1819.	— December - - January - -	17	10	1
—	— January - - February - -	6	16	2
—	— February - - March - -	7	4	—
—	— March - to 30th March - -	3	3	—
TOTAL - -		389	366	13

IV.
LEINSTER.

A Monthly Report of the DUNDALK Fever Hospital; commencing 22d August 1817, the day on which the Hospital was established.

					Admitted.	Discharged.	Died.
1817.	September 22d -	-	-	-	102	48	4
	October — -	-	-	-	156	122	8
	November — -	-	-	-	101	94	7
	December — -	-	-	-	79	92	2
1818.	January -	Return deficient					
	February -						
	March -						
	April -						
	May -						
	June -						
	July - 22d -	-	-	-	52	47	1
	August — -	-	-	-	64	64	—
	September — -	-	-	-	44	57	1
	October — -	-	-	-	43	36	1
	November — -	-	-	-	34	33	—
	December — -	-	-	-	40	39	2

Receipts :

	£.	s.	d.
Received from Government on 18th October 1817 -	75	—	—
„ „ „ 11th December „ -	50	—	—
Private subscription to 22d February 1819 -	577	6	10
County presentment -	70	—	—
Received from Government 8th June 1818 -	75	—	—
	£. 847	6	10

In hospital 1st January 1819 -	20	}	-	-	-	55
Admitted to 19 February -	35		-	-	-	
Discharged -	40	}	-	-	-	55.
Died -	—		-	-	-	
In hospital 19 February -	15		-	-	-	

(Ireland,)

93

SECOND REPORT FROM THE SELECT COMMITTEE

SECOND

R E P O R T

FROM THE

SELECT COMMITTEE

On the State of Disease, and Condition of the
Labouring Poor, in Ireland.

Ordered, by The House of Commons, to be Printed,
7 June 1819.

(Ireland)

THE REPORT - - - - -	p. 95
MINUTES OF EVIDENCE - - - - -	101
APPENDIX;—VIZ. The Four Reports from the Commissioners on the nature and extent of the Bogs in Ireland, (1810, 1811, & 1814;) with Extracts from the several Appendixes - - - - -	121

Ordered by The House of Commons to be Printed
7 June 1814.

S E C O N D R E P O R T.

THE SELECT COMMITTEE appointed to inquire into the State of *Ireland*, as to Disease, and how far the Measures, remedial and preventive, adopted by the Legislature or otherwise during the last year, have been effective for its removal or mitigation; and also into the Condition of the Labouring Poor of that part of the United Kingdom, with a view to facilitate the application of the Funds of private Individuals and Associations, for their Employment in useful and productive Labour; and to report their Observations, together with their Opinion on these Subjects, from time to time to The House;—HAVE, pursuant to the Order of The House, further inquired into the matters to them referred, and have agreed to the following REPORT:—

YOUR Committee having reported on the subject of Contagious Fever, that most calamitous indication of general distress in *Ireland*, have directed their attention to the other great branch of the duty devolved on them, viz. The Employment of the Poor.

In considering that most important topic, Your Committee find themselves in a great measure controlled by the unquestionable principle, that legislative interference, in the operations of human industry, is as much as possible to be avoided. There are, nevertheless, considerable exceptions to such a rule, either when injurious artificial impediments are to be removed, or where any branch of national industry, which cannot in its commencement be without great difficulty carried on by individual exertion, and solely by private funds, may be encouraged and facilitated by Parliamentary Regulation. With such qualifications, Your Committee have directed their attention to the deficiency of Employment amongst the People, and the Remedies which suggest themselves.

The general Distress and deficiency of Employment are so notorious, as to render it unnecessary for Your Committee to encumber their Appendix with particular Evidence to establish the extent and variety of the evil.

With especial regard to the limits of the specified exceptions from the general rule, Your Committee have directed their Inquiries particularly to two most important departments of labour in *Ireland*, that employed in agriculture, and that of the fisheries; they are likewise those to which the greatest extension may be given without hazarding reaction.

Upon the extent to which internal improvement and agricultural speculation may be pursued, with a confident expectation of adequate

and permanent benefit in *Ireland*, Your Committee refer with satisfaction to the able scientific Evidence contained in the Reports of the Commissioners of Bogs, &c. presented to the House; they prove the immense amount of land in *Ireland*, easily reclaimable and convertible to the production of grain almost without limit for exportation. The Appendixes to those Reports considerably abridge the course which their duty would have pointed out to Your Committee. They suggest the subjects for agricultural exertions, and the mode of execution; and the small extent to which their recommendations have been acted upon, demonstrates lamentably that want of capital which in *Ireland* unnerves all effort for improvement.

Your Committee have examined one of the most eminent of the Engineers employed under that Commission, and refer to the important Evidence of that gentleman (Mr. Nimmo), and his valuable Observations on the drainages of Holland, Hanover, and England.

It is obvious, that in any general plan of improvement, not only much of the efficacy but of the economy of execution must depend on the degree of skill and science with which it is planned. In order to bring the subject more conveniently within the knowledge of the House, Your Committee have annexed in their Appendix, a selection from the Reports of the Commissioners of Bogs, of such parts as have a general application, disencumbered of all matter merely of local importance.

Under the head of Drainage, two different objects are pointed out in those Reports; first, clearing, lowering and embanking the different streams which have flooded so much low ground in all parts of that country, and which, in the opinion of eminent physicians, forms a fruitful source of Contagious Fever. Such works cannot there be executed under separate Acts of Parliament, to the expense of which those concerned are not equal.

The ancient practice of England by Commissioners of Sewers, under the 23d of Henry the 8th, cap. 5, seems applicable to the case, and which has never yet been introduced into the Statute Law of Ireland, or consequently acted on there; with such view either the Grand Juries may be made Commissioners, or separate jurisdictions may be established for the purpose; and if effected by assessment, the success which has attended the road system would promise a competition for improvement.

Secondly, draining and reclaiming the great Bogs and Marshes. Those objects may properly be left to individuals or associations, as a profitable adventure, and legal provisions should be made for their repayment, by a portion of the ground, either in fee or lease. It was by such means that the great drainages of England were effected, in the last and preceding centuries. The Acts already existing for that purpose* should be amended, for the cases of individual proprietors, and a general Act passed, to facilitate and encourage private Acts, where there are a variety of interests.

A third and most important object recommended by the Commissioners, and to which Your Committee will advert, in connection with the

The General Act for Sewers, 23 Hen. 8, c. 5, was framed upon

6 Hen. 6, c. 5.

8 Hen. 6, c. 3.

4 Hen. 7, c. 1.

6 Hen. 8, c. 10.

Extended to 5 years by 3 Edw. 6, c. 8.

To blowing Lands by

1 Mary c. 11.

To 10 years, &c.

13 Eliz. c. 9.

To all Waters within 2 miles of London, by 3 Jac. 1, c. 14.

To making Sales of Copyhold, by 7 Anne, c. 10.

22 Car. 2, the Commissioners of Sewers for London appointed by Mayor and Commons.

By 13 Eliz. the Ordinance made by any Commission, stand until repealed by a new Commission.

*Vide 43 Eliz. c. 11 and many subsequent Acts.

12 G. 1. c. 12, for Bishops only.

5 Geo. 2, c. 9, for boundary Drains.

11 & 12 Geo. 3, c. 21, restricted to lots of 50 acres to Papists.

the Fishery, in a subsequent part of this Report, is the formation of Roads in the mountain parts of *Ireland*: those districts, whilst they are subject to their proportion of the expense of county works, have not had their due share of the benefit of the Grand Jury system. In such districts it is peculiarly necessary, that Lines of Road and other works should be planned and superintended by skilful persons, the importance of which has been exemplified in the execution of the Highland Roads, and the present North Wales Road, compared to the former imperfect and expensive method.

Amongst the positive evils resulting from the want of employment and the impassable state of the Mountain Districts, is the facility, under the present circumstances of the country, of illicit distillation, with its consequent depravation of morals and loss to the revenue.

The want of capital in *Ireland* is attributable to various causes. Capital can accumulate only out of the savings of individuals. In *Ireland* there are few persons who, either in manufactures or agriculture, conduct their operations on such a scale as to admit of much surplus for accumulation. The manufacture which flourishes, the Linen, is spread abroad amongst a population which at the same time cultivates the soil for their sustenance; and though such a manufacture may be more conducive to health and morals in the manufacturer, it is more incompatible with large savings.

In like manner in agriculture, the tendency, from various causes, to subdivision of farms, and the general practice of throwing the expense of buildings and repairs on the tenant, countervail the accumulation of profit in the hands of the farmer, and the application thereof to beneficial enterprize in agriculture.

It is almost impossible in theory to estimate the mischiefs attendant on a redundant, a growing and unemployed population, converting that which ought to be the strength into the peril of a state. It is obvious, that the tendency of such a population to general misery, must be rapid, in proportion to the facility of procuring human sustenance, leading to the boundless multiplication of human beings satisfied with the lowest condition of existence.

That such a population, excessive in proportion to the market for labour, exists and is growing in *Ireland*, is a fact that demands the most serious attention of the Legislature; and makes it not merely a matter of humanity but of state policy, to give every reasonable encouragement to industry in that quarter of the empire.

In considering the causes which discourage industry in *Ireland*, it is impossible to overlook the lamentable circumstance, almost peculiar to that country, of the non-residence of a great proportion of the Proprietors; and especially of that portion which could most contribute, by their rank, their wealth and their moral influence, to operate beneficially on the habits and comforts of the lower classes. The expenditure of income in England, resulting therefrom, enhances the claim of *Ireland* on the generous consideration of Parliament.

On the subject of agricultural improvement, Your Committee, (controlled by the permanent principle of avoiding unnecessarily to tamper

with so important a branch of industry, and leaving it to its best encouragement, the operation of a free market,) nevertheless think it necessary to point out the extent to which *Ireland* may be improved, and its power of production of human food vastly extended.

It appears in evidence, that there are of reclaimable Bog in *Ireland* two millions of Irish acres, of a soil suited to the production of grain; that the measures suggested by the scientific persons employed under the Bog Commissioners, much facilitate the application of private speculation to such improvements; and that in order to give efficacy to those suggestions, a General Inclosure and Drainage Act, on the principle of that for England, would be highly important; beyond that, as the basis for particular local Acts, Your Committee do not venture to go, save in recommending, that the powers given under the Act of last Session be extended to exempting from interest such advances as may be made for "Public Works," on due security for repayment of the principal within a limited number of years. A reference to the Reports alluded to will evince the great source of employment which the improvement of the Bogs of *Ireland* would offer to the population; and the facility of transport by canals through such level lines, would insure to England supplies of grain at moderate prices, which might render it wholly independent of foreign countries for the food of its manufacturing population.

The Mountain Districts of *Ireland*, at present comparatively unproductive, are capable of high improvement; they consist of about one and a half millions of Irish acres, of which it appears that about one half is suitable for agriculture, the remainder for much improved pasturage, for rearing or dairy purposes; and the entire eminently suitable for planting, much of the worst of it having been old forest land.

The nature of the evidence relative to those Mountain Districts has led Your Committee to consider of their improvement, in connection with that of the Fisheries, of which the principal lie along the coasts of those districts.

In whatever view it can be considered, whether as a source of national wealth, as a means of employing an overflowing population, or as a nursery of the best seamen, Your Committee cannot too strongly impress on the House the importance of the Irish Fishery. In addition to the evidence on that subject, stated in the Appendix, Your Committee have referred to several Reports of the Irish House of Commons, from the year 1733 to 1799, all demonstrating the highly advantageous situation of *Ireland*, as a seat of the fisheries, which could alone have been rendered unprofitable by a most perverse and injudicious system of laws.

The revision and simplification of those laws, and the direct application of encouragement under them to the resident fishermen of the coast, Your Committee consider essential to any successful fishery in *Ireland*.

The failure of the existing system may be proved by the fact established in the public Accounts, that while in the last year herrings were imported to the value of £.58,197, the export trade, within the last three years, has fallen to a twentieth part of its former amount.

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The actual condition of the Fishermen on the coast appears to be miserable; and yet their general habits, character and qualifications, are highly deserving of liberal encouragement.

It appears from the whole current of evidence, not only that the western, northern and southern coasts of *Ireland*, afford every advantage for a Bay or Coast Fishery, but that they are eminently suited for a deep sea Cod Fishery of great importance, calculated to afford permanent employment, independent of that for the production of oil from the whale and basking-shark, which abound in the contiguous seas. Without enlarging on the importance of this subject, Your Committee refer to the evidence in their Appendix, as well as the voluminous testimony contained in the Irish Journals before referred to, and they particularly call the attention of the House to that of Mr. Telford, which has enabled them to take the benefit of experience from an improved system of Fishery Laws, and of parliamentary encouragement, wisely applied and eminently successful in the case of Scotland. The inestimable benefits of the measure, which has opened through the Highlands of Scotland suitable lines of road into the seats of the Fisheries from the more improved districts, form a strong contrast to the numerous instances in which public money has been injudiciously applied to local objects. The establishment of successful Fisheries in consequence has materially augmented the national wealth, and opened sources of the most valuable industry; and it appears to Your Committee, that so extensive a national benefit was never attained for so moderate an expenditure.

In the case of Scotland, in 1802-3, the Treasury adopted the principle of applying the public money for the great ultimate public object of encouraging the Fisheries; and with that view, they ordered surveys to be made by skilful engineers, and approved a scheme for opening the Highlands on a prospective estimate of £. 150,000, to be met by an equal levy on the districts to be thereby improved; of the signal success of that scheme your Committee have the most satisfactory evidence.

On every ground of policy as well as justice, Your Committee earnestly recommend the application of the precedent of Scotland to the Highland Districts of *Ireland*. It appears in evidence, that the circumstances of the countries in question are remarkably similar; they are both mountainous and uncultivated, and abound with an unemployed population. The Irish soil is stated to be capable of higher cultivation, as better in itself, and equally abounding with manures, which at present cannot be transferred for its improvement beyond the mere precincts of the sea. It abounds with the best natural harbours for safe anchorage and shelter, but is deprived of the benefit of these from the want of piers or landing places, which it appears could be constructed at a moderate expense. These favourable fishing stations are also, for want of roads and bridges, cut off from intercourse with the interior, from which capital may be expected, and a market found for the coast fishery.

To all these natural claims to similar encouragement, those districts of *Ireland* add the very serious one, that from the non-residence of a majority of the proprietors, they do not possess within themselves the means of effecting those objects by private exertion. It appears moreover, that in the case of Scotland, no combination of private individuals, with equal funds, could have effected the same amount of good which has been wrought under the Parliamentary Commission for Scotland. And in any measures which the wisdom of Parliament may adopt, the power through which it is to be exercised should be removed from the influence of local interests and partiality in its application. It is no small recommendation of a similar experiment in *Ireland*, that the amount of money requisite for its completion is so small as not to present any obstacle, even in the present difficult situation of the finances of the State; and that its application would moreover be justified and facilitated, by the power possessed under the Grand Jury system of *Ireland*, of taxing the land to be improved in an amount equal to any public grant, by which much of the difficulties encountered in the Scots system would be avoided.

7 June 1819.

MINUTES OF EVIDENCE.

WITNESSES.

Mr. Alexander Nimmo;—Mr. Robert Fraser;—Thomas Telford, Esq.

Sabbati, 8^o die Maij, 1819.

The Right Honourable Sir JOHN NEWPORT, Baronet,
In the Chair.

Mr. *Alexander Nimmo*, called in; and Examined.

YOU have been lately in the county of Kerry; were there many poor willing to work, who could not get employment?—There were; the number of poor in the northern part of the county is so great, and such is the distress for want of employment, that several hundreds at a fair, lately, in the neighbouring county of Limerick, willingly hired themselves as labourers at four-pence a day.

Mr.
Alexander Nimmo.
(8 May.)

Did they get their diet also?—Certainly not; the poor inhabitants of the village of Hospital were so exasperated at their tendering themselves as labourers at this rate, that they fell upon them, and nearly killed several of them, and some afterwards died.

What is the common rate of labour there?—Eight-pence a day; I had occasion to check the accounts of a public work in the neighbourhood, and that was the rate of labour.

Do you know of any work now undertaken, or likely to be undertaken, that can supply employment?—The Tralee mail-coach road, on which £. 14,000 is to be expended, is about to commence, and will furnish employment for two years; but that will only employ the people of that district; it is hoped, before the expiration of the time that the drainage of the bogs in the neighbourhood will commence, if not obstructed by legal and other difficulties. A very considerable body of proprietors have petitioned for leave to bring in a bill for that purpose; this, however, only applies to one part of the county of Kerry; the difficulties I alluded to are, the want of funds to make the primary advances. The extent of the bogs to be drained are 30,000 statute acres.

What do you consider as the legal difficulties to the effecting of the drainage of this and other bogs and waste grounds?—I will furnish the Committee with a statement of them at a subsequent opportunity.

Have you been employed under the commissioners of bogs in Ireland as an engineer, and had any opportunity of seeing improvements of that nature elsewhere?—I have, in the county of Kerry, with the bordering parts of the counties of Limerick and Cork, and the western part of the county of Galway; and I have since visited the improvements made by Messieurs Bradshaw and Roscoe in this country, and also several in Holland, Flanders, and Westphalia.

Did you possess any facilities for seeing the works executed in Holland?—I was recommended by our ambassador to the director general of the water-staat, who is the minister having the direction of all the public works of drainage, roads, and navigation there; I was shown liberally the plans in his office, recommended generally to the Dutch engineers, and particularly to the superintendent of drainage, by whom I was carried over some of the chief works of that description, and of which I have plans; the engineers of that country were very liberal in their communications.

Did you examine into the result of the execution of any of those works?—I did, of several; and particularly that of Zevenhoven, &c. about 20 square miles in extent, and in cultivation, when I saw it. The greater part is 18 feet below the low-water mark of the ocean; the soil is bog, exactly the same as the Irish, the under-stratum

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Mr.
Alexander Nimmo.

(8 May.)

marly sand, the original depth of peat, from 12 to above 20 feet. I have also seen a great deal of the process of draining in Flanders and Westphalia.

Will you furnish the Committee with the detail of your observations on the process employed for draining and improving the bog above mentioned, and other bogs you have turned your attention to on the continent; and as far as you are able, the heads of expense attendant upon it, with the comparison of the expenses which would have attended a similar drainage of the bogs in Ireland, and the grounds on which you would form such a comparison?—I will, so far as the notes which I have in town, will enable me.

Have you turned your attention to the provisions that might be requisite for the formation of a general drainage bill, and on what principles would you recommend such an act to be constructed?—I have drawn up the heads of a bill on the precedent of the general Inclosure Act of 1801; it is in the hands of Mr. Secretary Grant; I think, however, it might be desirable to make some particular regulations in addition, especially on the subject of drainage.

Have you had opportunities of seeing the wastes and bogs in the other parts of Ireland?—In the course of my professional engagements, I have had occasion to visit nearly all the bog and waste tracts of Leinster, Connaught, and Munster; I am very little acquainted with Ulster.

Have you found in those tracts of country, large quantities of improvable land very inaccessible in their present condition?—The western parts of Donegal, Sligo, Mayo, Galway, Kerry and Cork, are mountainous districts, into which there are few or no roads practicable for carriages; the formation of such roads for transporting manure and produce, is the chief means of improvement, which I and my brother engineers employed on the bogs, have recommended for those districts.

Have you found in those districts many valuable harbours?—The best natural harbours in Ireland are in those districts, but they are in general little used for the purpose of commerce.

Are those harbours nearly unavailable in their present state, for import or export of the produce of the country?—They are chiefly useful to the fishermen who inhabit their banks, whose numbers are very great, but of small avail for import and export, from the want of wharfs and landing places, or of roads to them, through the mountainous and boggy tracts on their shores.

Are not the fisheries considerably discouraged by the difficulty of passage through the adjoining country?—They are so; for instance, the Killery harbour, which has an excellent fishery, is within nine miles of the thriving town of Westport; there is no road to that harbour fit for carriages, nor any road at all along either shore.

Is that the general case of the harbours lying on the coast of the mountain district?—It is very much the case.

Have the Scotch fisheries been materially promoted by opening lines of road to the harbours where they are carried on?—That was the chief object of most of those roads.

Were those roads you speak of in Scotland constructed in any part at the public expense?—The parliamentary commissioners have granted one-half of the estimated expense of every road, the other half is defrayed by assessments on the proprietors of the whole county, where the county have agreed to the roads, or by the private subscriptions of those interested in other cases, and the engineering and superintendence of these roads are defrayed entirely by government; but for this subject, I must refer you to the parliamentary reports.

Have you had an opportunity of examining the execution of those public works in Scotland?—I have, but not within these last seven years.

Did it appear to you, that the works had contributed much to the improvement of the country generally?—The habits of industry and skill which those works introduced, have been of considerable service; but few of them were so far completed when I left that country, as to enable me to judge of the effect; Mr. Telford, who has superintended those roads, can give better information on the subject.

Does the coast of the mountain districts of Ireland, compared with Scotland, contain much valuable manure for agricultural purposes?—The mountain tracts in Ireland of which I have spoken, are vastly superior in their capability for improvement to any part of the western highlands of Scotland, in point of soil, climate, elevation and nearness of market, provided they were accessible. With respect to manures, they are similarly circumstanced; shell-sand and sea-weed equally abounding, and these manures are in many cases carried on horseback many miles into the interior; and on the farms along the shore, they are chiefly carried in baskets on the backs

backs of men and women, but I have never seen a wheel carriage employed for that object, owing to the want of roads. Limestone is more abundant in the Irish than in the Scotch highlands.

Are those manures peculiarly applicable to the improvement of the mountain districts?—In my opinion, these are the best manures for that purpose, as the improvement of the bog and mountain on these coasts has been carried further than on any part of the interior.

Are those districts populous?—The population of the sea coast is very great, but the interior of the mountain tracts is mostly desert, until you arrive back at the cultivated plains.

Do the inhabitants wander much about the country to obtain work?—The chief resource the inhabitants of the coast have is fishing; they are in a great degree unemployed.

In Connaught there are no public works to which they can apply; in Munster the poor labourers from Kerry, Cork, &c. come frequently to the works at Dunmore near Waterford, upwards of 100 miles, but the limited number of the workmen there, and the claims of the distressed population of the neighbourhood, prevent their obtaining much relief from that undertaking. At all times however, a great many poor labourers from these mountain districts, are in the habit of wandering in search of employment in the common operations of agriculture or otherwise. On the least encouragement, several thousand of these labourers appear in search of employment at any public work.

DO you know what proportion the highlands of Scotland bear to the entire contents of Scotland?—They are at least one-half the area, and contain one-sixth of the population.

Are the seats of the fisheries chiefly in the mountain districts?—The most valuable fishings are in the mountain districts of the west coast; but the inhabitants of the east coast, which is better cultivated and nearer the market, have hitherto prosecuted the fishery with most success.

What proportion do the mountain tracts of Ireland, bear to the whole of the island?—About one-fourth of the area; the whole area of Ireland is about 12,000,000 Irish acres, of which 2,000,000 are bog, and 1,500,000 uncultivated mountain.

How much of the uncultivated tract might be cultivated?—About one-half, but the whole of it is fit for plantation.

BY the half which may be improved (as stated in a former examination,) for cultivation, do you mean that it might be laid under the plough?—Under the spade, under tillage, fit for conversion to arable land, by the plough or the spade.

Could the remainder be materially improved for pasturage?—Decidedly, by draining and liming.

Will you state to the Committee, the particular district of sea-coasts on which fisheries can be carried on, which have come under your notice, and where you consider the establishment of new roads, and improvements of old lines of road, to be essentially necessary to the furtherance of such establishments?—The first great tract of mountain country of that description, and well suited for the fishery on the west coast of Connaught, with which I am acquainted, is the peninsula between Killalla Bay and Newport, in the county of Mayo, commonly called Erris; the next the peninsular tract between Westport and Galway, beyond Lough Corrib, called Morisk and Conamara; the third the barony of Burren, in Clare; fourth, the peninsulas of Corluguiny, Iveragh, and Bantry, in Kerry and Cork.

Are you acquainted with the state of the fisheries of Ireland, on the coast?—Not very accurately.

Do those districts which you have named, stand much in need of improvement, with respect to roads?—This is so much the case, that in the first two districts, the grand jury of Mayo have borrowed from the commissioners for loans, considerable sums, in anticipation of their presentments for making two roads into Erris and to the Killery harbour. In Galway and Clare nothing of that kind has yet been proposed, from the gentlemen not yet being aware of the powers of doing so. In Kerry, application has also been made for a road into the peninsula of Iveragh, and others are intended; many more roads would probably be undertaken, were those powers continued, or other more accessible funds provided.

Mr.
Alexander Nimmo.
(8 May.)

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Mr.
Alexander Nimmo.
(14 May.)

Are not the principal of these sums to be repaid by instalments, with interest thereon, by the counties?—They are, under the act of last session, which empowers grand juries to borrow.

Do you know whether the expense of such repayment is incurred by the mountain districts through which the roads are carried?—I believe Erris and Killery roads are by the county at large, I think those two; the Mayo roads are by the county at large, the Kerry road partly by the barony.

Is not the forming and gravelling of all the Kerry road, levied on the barony?—Yes, the masonry is defrayed by the county.

Is there a great population in those districts you have mentioned?—Along the shores chiefly, the population is very great.

Does the fishery in those districts appear to be conducted upon a judicious principle?—The chief part of the capital of the poor people there is employed in the fishery, but their boats are certainly very imperfect; the boats of Mayo and Galway are half-decked hookers, those of Clare are chiefly made of wicker and hides, and in Kerry they have only yawls.

What kind of fishery is off that coast?—The coast of Galway and Mayo abounds peculiarly in mackerel and turbot; they also pursue the sun-fish to a great extent, but at much risk, in consequence of the inferiority of their vessels for that stormy sea; towards the South gurnet, soles and hake, are the chief; cod is general over all.

Do you mean to say, that upon that extensive coast mackerel and turbot are the principal fish taken?—I think they are the chief fish pursued on that coast, except cod?—Are you aware that an extensive fishery could be made beneficial to the people of the country, beyond the mere market of the day?—Mackerel is not cured; but turbot is sent from Galway to Dublin; and those of Erris would also, if it were practicable; the turbot of Galway and cod come across the Shannon, and are sold in Tipperary and neighbouring counties.

Do you think that the fishermen confine their efforts to near the shore?—In the south they do, excepting about Kinsale.

Is there a valuable sun-fishery pursued on the coast of Galway and Mayo?—Yes.

Are you aware of any oil being sent to London, obtained from that source?—Not personally; I have heard so.

Do you not consider that the fisheries on the coast would admit of considerable improvement?—I have no doubt that they would.

Have you any reason to suppose, from any thing you have heard, that there is a very extensive cod fishery which might be made available on the coast of Ireland?—I have understood that there is a very extensive range of cod banks on the western coast of Ireland, especially off the Isle of Ennisbofin; but I am very little acquainted with this subject; I know along the coast of Waterford there are no boats fit for fishing; they have no harbours to hold such boats; they must have boats to draw up on the dry land; but on the western side of Ireland nature has provided harbours in which the hookers lay afloat.

Do you consider that the fishery is declining on the western coast of Ireland?—Indeed I am very little acquainted with the fishery of Ireland. I think I can give but very little information upon that subject; I understand that the herring fishery was very valuable some years ago on both sides of Ireland, but it failed. We had last year, in the neighbourhood of Waterford, a good quantity of herrings, and an immense quantity of sprats and mackerel. At the works at Dunmore I have seen two or three hundred people standing in an evening fishing for mackerel with rod and line; I mention this only to show their abundance.

Do you conceive that the fisheries on the coast you have mentioned would be very materially encouraged, by opening improved lines of road into the interior of the country?—It would, from the superior facility of access to the market.

Do you not conceive, independently of the facility of access which these roads would give for that purpose, that it would be of great general benefit, by opening those places to other parts of the country?—Yes, and converting those places to agriculture, much more than by any thing else.

That agriculture, as well as the fisheries, would be materially improved by such lines of road?—The truth is, the only encouragement to agricultural pursuits in Mayo, is by the conversion of the grain into whiskey; for this is the only shape, I might almost say, in which the agricultural produce of the country can be carried out, it being necessarily conveyed on horseback.

You mean to say, that in the present state of the country there is no other profitable mode of applying the produce of the land, but by making it into whiskey?—No; in the southern

Mr.
Alexander Nimmo.
(14 May.)

southern mountainous tracts in Kerry and Cork, there is no distillation of illicit whiskey carrying on; the ground is there under pasturage, and the produce chiefly butter, which is universally carried out on the backs of horses; these other tracts of which I have been speaking, make no butter; there is only cattle for breeding; there is a good deal of that kind of stock sent out, and also many pigs.

In your opinion, would the construction of carriage roads lead to the sending of grain to market?—Yes; I have no doubt that it would be the means of converting the countries of Erris, Morisk and Conamara, into grain countries; roads have within these last thirty years had that effect in the plains of Mayo; at this moment these plains constitute one of the most fertile districts in Ireland, and which is evident from the exports of the port of Westport, which have amounted to many thousands a year.

Generally speaking, is not the grain in that district cheaper than in other parts of the country?—Yes.

To what do you attribute that increase of cultivation?—The chief cause was, I believe, the great encouragement of the late lord Sligo, and the ready market given by some merchants settling in Westport.

The Committee understand, that you are extremely well acquainted with the state of the bogs and wastes in the interior of Ireland?—From travelling over them only, not from any actual survey, except what is accessible to every body else, the general bog reports.

Do you not consider, that the application of capital and enterprize to reclaiming these districts, would be a very extensive means of employment to the population?—Yes, I conceive so, and also a very profitable application of capital.

Are not these tracts very populous, and the population in a state of great poverty and distress?—There are many tracts of Ireland where the population amounts to one person to every two acres of surface; in the county of Louth you have a whole family on two acres.

Would the labour applicable to such improvements be in a great proportion manual labour?—Almost entirely; horse labour can be very little used in bogs.

Have not the mode and manner of conducting such works been very accurately considered by the engineers employed under the commissioners; the mode of executing the drainage of bogs, and the reclaiming of the soil?—The reports of the engineers have been chiefly guided by the operations which have been already performed, supposed to be improved in such manner as their superior acquaintance with the modes of facilitating labour enabled them to suggest.

Do you consider that the improvement of the tracts would be likely to afford a permanent source of employment to the people afterwards?—The improvement of the bogs and waste, would provide for an additional agricultural population of two millions.

What is your opinion, with respect to the operation of the Loan Act, passed the last year; do you think it has at all answered its object?—I am one of the engineers of the loan commissioners, and would rather be excused at present from answering this question.

Do you consider that the adoption of a general drainage act, as the foundation of particular acts, applicable to separate districts, would very much facilitate the employment of the poor, and the improvement of the country?—I think it would very much facilitate that object, and especially if some means were provided for valuing the interests which at present tend to restrict the improvement, although not in themselves applicable to any profitable purpose.

Are you aware of large districts of very valuable soil at present requiring drainage, in Ireland?—The banks of almost all the rivers are liable to be overflowed, and yet they form the finest pastures in that kingdom, very few of them have been as yet embanked.

Do you know of large districts of rich soil which are inundated?—There are some extensive tracts of that kind, especially on the Shannon.

Very extensive?—Yes; it was thought by Mr. Jessop, the engineer, that many thousand acres of land could be got by lowering the rocks at Killaloe, on the Shannon.

Do you suppose that the want of such laws as exist in England, respecting drainage, is not a great impediment to improvements in Ireland?—It certainly is a great impediment; there are no laws calculated to procure any co-operation; what laws are applicable to Ireland, in many instances, are not suited to Irish property.

What progress is now making in the reclaiming of bogs in Ireland?—The reclaim-

Mr.
Alexander Nimmo.
(14 May.)

ing of the bogs has been a good deal hastened apparently by the printing of the bog reports; many extensive works in the way of embankment, navigation and drainage, have been begun in different parts of the country, but yet with a very partial effect; much good probably would be done by the publication of those reports, for I find many proprietors extremely anxious to get possession of them, which can be only done by an order of the House itself.

[The following Papers were delivered in, and read:]

Some Account of the Drainages of Holland, &c.

By Mr. Alexander Nimmo, F. R. S. Ed. Civil Engineer.

IN order to have a correct idea of the works of drainage in the low countries, it is necessary to take a view of the physical position of that interesting portion of Europe.

We may perceive, even by the map, that the northern part of Germany is an immense plain, descending gently towards the north sea, near which every thing like high land disappears, there being no considerable mountain within 150 miles of the coast; and from Calais to the coast of Denmark, the shore exhibits chiefly a range of low sand hills or downs, here and there broken so as to admit the exit of the land waters of the great plain aforesaid.

It is probable that these downs owe their formation to the action of the sea, which has very little rise and fall on the shores of Holland and Denmark; these countries being situated so as to be little affected either by the tide of the north sea, or that of the English channel. Behind this range of downs, which seldom exceeds a mile in breadth, lies a shallow bason, chiefly occupied with peat, bog or morass, the surface of which is but little above the mean level of the sea, and the bottom from 10 to 20 feet below it. The breadth of this space varies frequently, the outline of the dry lands of the interior being much more irregular than the shore of the ocean. It is broadest in Holland and Friesland, where the great inlet of the Zuyder Zee still exists unfilled with peat; and, according to tradition, was formerly a lake only, until the Cimbrian deluge, breaking the northern boundary of the morass, had admitted the ocean into Friesland.

It may be observed, that the continuous part of the morass is chiefly in the neighbourhood of the great rivers, the Rhine, the Meuse, and the Scheldt. It is the nature of all rivers, liable to inundation, to deposit a great part of their sillage on the immediate bank, which thus rises more rapidly than the morass behind; this kind of natural embankment has in every country produced a slip of land, on each side of a great river, of extraordinary fertility, and great value to a pastoral people. It may have first suggested the idea of completing and extending the work, by embanking the rivers, and securing the meadows by dikes. The embankment of the Rhine, at least of the great island of the Betume, is more ancient than the invasion of Cæsar; but the greater part of the works of that kind date from the middle of the twelfth century, and appear to have been suggested by the crusaders, after seeing the works of the Delta in Egypt. Various tracts of Holland were formed into waterships or districts of drainage, and regulated by corporations consisting chiefly of the landed proprietors, which system continued until the late formation of the Batavian republic. The works executed by these corporations, for the purpose of drainage and navigation, are truly astonishing; they are supposed by able judges to have cost at least three hundred millions sterling; and yet the whole country is not larger than Wales or Munster.

The most remarkable event in the history of the drainage of Holland is the invention of the windmill, about three centuries ago. By means of that instrument, the system of drainage has been extended to those morasses and lakes, which were already as low as the sea or neighbouring watercourses. In fact, a great part of that singular country is placed at a lower level than the neighbouring ocean, and kept dry by artificial means alone. Such tracts are called polders; they are surrounded by banks, over which their waters are lifted by windmills. Successive operations have carried this so far, that some of the lately drained polders are even 18 feet below the ordinary low-water of the Meuse or Ye. When to this we add the height of the interior rivers, which are embanked in some instances as high as 24 feet, the situation of that country appears truly critical.

On the setting in of winter, drainage ceases; the meadows are converted into a sea of ice; but, provided the rivers are secure, a short period of the spring is sufficient to clear all the proper waters of the polders. The mills are not wanted

more

Mr.
Alexander Nimmo.
(14 May)

more than 30 days at an average during the whole year; each mill is equal to the drainage of 600 acres; the whole throwing to the height of four feet 700 barrels of water (each $5\frac{1}{2}$ cubic feet Rhineland) per minute.

Besides the natural lakes which pervade Holland, the watery surface is constantly extending by the process of cutting turf for fuel, which reaching to the depth of 12 to 20 feet below low-water, leaves the country from which it is extracted in the state of a lake interspersed with numerous isles of turf. These sheets of water, named "plassen" or "plashes," are all on one level within certain districts, and communicating with the canals, are pervaded by boats navigating by the sail or perch. But as many of these slashes, uniting together, form great lakes, having waves, which act upon and corrode the neighbouring lands, it is part of the policy of the Dutch to have them drained and cultivated; permission, therefore, is not given to cut turf in this way until a certain deposit is made in the hands of the state. But this fund, however adequate it may have been in former times, is now far too small for defraying the expense of drainage; it forms a portion of the national debt, and is payable to any person or company who will undertake the drainage. About 150 years ago, nearly all the lakes of North Holland (containing about 80,000 English acres) were reclaimed by private companies as a profitable speculation; but of late the great works of this kind have been chiefly undertaken by the state; the land-owners in most cases agreeing to surrender their claims. The lake is surrounded by a dyke of a particular construction, to keep out the foreign waters, and on the outside a surrounding drain is made of sufficient dimensions to be a navigable canal; the interior water is then elevated into this canal by means of windmills, and passes thereby to the ocean. When the polder is drained, the remaining turf is sold for fuel, retaining a certain portion to form a soil which of course is similar to the "cut away bog" or "mooreen" of Ireland. The ground is then tilled and sown with rape, which is sold on the spot by auction, as is also the hay on the roads, dikes, &c.; and sometimes a second crop is taken ere it be laid down with clover; the lands are then divided into kavel or lots and sold to the best bidder, subject to all the expense of supporting the drainage, as also to the usual taxes on land, cattle, salt and the like, from which, for a term of years at least, those lands reclaimed by private adventurers were usually exempted.

One of the latest works of this kind is the drainage of Nieuwenkoop and Zevenhoven, completed in 1812; it extends over 20,000 English acres, and cost £.300,000 sterling, of which sum the sales only returned one half, but the state considers itself amply paid by the taxes arising from the newly gained land, and the cessation of the damage formerly caused by the lake.

The neighbouring drainage of Mydrecht has already cost a million of guilders or £.100,000, and is still incomplete. The steam engine has been employed there with partial success.

These drained countries in Holland are found to be very productive; and though originally acquired and supported at an expense vastly greater than is necessary in bogs or marshes, which are level free. Yet the drainage charge seldom exceeds four guilders per acre per annum; and such is the security felt, that houses and farm buildings are erected and inhabited, and capital invested in them, without scruple.

Their greatest advantage is the perfect command which they have of the water, the height of which, from the general flatness of the polder, may be and is regulated to an inch; the millers throwing off the waters whenever they rise, and drawing down from the canals whenever there is a drought.

Where the Dutch have not this convenience, they do not seem to be versant in the cultivation of turf bog, though a good deal has been reclaimed on upper ground also, especially in the eastern provinces. The polders of Holland, though they have given abundant crops of every kind, are for the most part kept in permanent pasture.

Short Account of the Drainage of the Fens in England;

by Mr. Alexander Nimmo, Engineer.

UNTIL the latter part of the reign of queen Elizabeth, the business of drainage was in this kingdom intrusted to the management of local commissioners of sewers, whose powers were partly regulated by the custom of Romney Marsh, partly various temporary statutes, and in the reign of Henry VIII, by a general law, on which they still proceed.

The objects of these commissioners, as may be seen by the law of sewers, and form of the commission, 6 Henry VI, was not the investigation of new improvements or means of relief, but the preservation of ancient channels and banks, and the discovery of the persons whose duty it was to uphold the same. These commis-

sioners

Mr.
Alexander Nimmo.
(14 May.)

sioners are appointed for a term of years by the chancellor, &c.; their form of proceeding is by the summoning a jury, to inquire into nuisances, and present for their removal.

No great work of drainage could properly be undertaken by their authority; what had been previously done, was chiefly the work of the various religious houses to whom we owe so many agricultural improvements, and on their dissolution by Henry VIII, it is probable many of these improvements fell into decay.

But at the period alluded to, sundry adventurers from Holland, and especially the English officers, who during their services in the wars of the low countries, had witnessed the success of many great works of that kind, and had become well acquainted with the practice thereof, introduced a new system of proceeding, and proposed to undertake the recovery and drainage of great tracts of land on a regular plan, and as a profitable adventure. One of the first adventurers of this sort, of whom we find mention, was captain Thomas Lovell, who undertook the drainage of Deeping Fens; he is represented in the petition from Deeping and other neighbouring towns, as "a man skilful in like works, wherein he had beyond the seas been much used and employed;" 41 Eliz. He was to have executed the undertaking in five years, and to have one-third of the fens for his trouble, but probably failed from want of capital, for in his petition, 1 Jac. he states, that his whole fortune of £. 12,000 was expended in this undertaking, and it was after all imperfect.

This, however, seems to have been the commencement of the grand project for draining the fens; the commission granted about twenty years before, for inquiring into the plan for a new outfall drain for the fens by Clows Cross, having been only a partial measure, and nothing effected in consequence of it.

In 43 Eliz. a *general Drainage Act* was passed for the recovery of many thousand acres of marshes and other grounds subject commonly to surrounding waters, within the isle of Ely and the counties of Cambridge, Huntingdon, Northampton, Lincoln, Norfolk, Suffolk, Sussex, Essex, Kent, and the county palatine of Durham. In this Act, it is stated, "that the chief obstacle to the recovery of such grounds by skilful and able undertakers, is, that the greater part of them are wastes and commons, the rights to which could not be extinguished by common law, nor could the commoners pay their part of the charges of recovery;" a power was therefore given to the owners and majority of commoners, to make contracts for the recovery with undertakers, and to convey to them a part of such lands (except crown lands, without the royal assent) as might be agreed on by way of reimbursement.

Soon after the accession of James I, the business of a general drainage was taken up more earnestly; the king expressed his willingness that the crown lands should contribute as others, and appointed Henry Totnall and John Hunt to view the fens, and agree with as many lords and commoners as they might, and the commissioners of sewers of the various counties, were directed to assist them. Mr. Richard Atkins, of Outwell, was employed to bore over the level to the depth of eleven feet, in the line of the proposed works; and W. Hayward made a survey of the fens, by which the contents appeared to be 307,242 acres. This general drainage was reported by the commissioners to be feasible, and after a particular survey of the various water courses, which appear then to have been very defective. The great features of his plan, were explained by Hunt, the artist for the drainage; viz. to cut straight courses for the rivers Ouze and Nen to Salterslode, where the river Ouze, at low water, was found to be ten feet below the soil of the fen, and to turn the rivers into these courses, by sluices at the beginning of the new cuts. These works, or nearly the same, have since been executed: 13th July 1605, Sir John Popham, lord chief justice; Sir Robert Fleming, chief baron of the exchequer; Sir Wm. Rumney, alderman; and John Eldred, citizen and clothworker of London, were declared the undertakers of the drainage of all the fens between Ouze and Deeping, and to have 130,000 acres for their portion. From want of skill in the engineers, or other causes, the success of this first company was not great. On the 5th of August, Hunt and Atkins laid out the new channel for the Nen called Popham's Eau; it was opened 21st of December, to Upwell, but in March following broke its banks, and had to be stopped. In 1606, a bill was brought into parliament, for regulating the drainage, which however under the authority of the commissioners, proceeded slowly; 1609 Popham's Eau was enlarged; 1611 a channel was laid out, and made, by Hunt, for the drainage of Coldham and Waltersey, a separate but subordinate undertaking, the waters from which passed by a tunnel or pipe under the Welle river, and thence along the edge of Marshland, to the Ouze at Stowbridge; at laying the sluice at Stowbridge, the coffer dams were repeatedly

repeatedly burst. In 1630, a very high tide occurring, broke the dikes of Marshland, and laid the district under water, doing damage to the extent of £. 40,000; this tract is situated between the fens and the sea, and strenuous efforts were now made to have the various outlets to sea first deepened, ere the water should be brought from the fens. The commissioners were also annoyed by vexatious suits, so that little progress was for some years made in the general scheme of drainage, and even the scouring of the old channels was obstructed by the diversity of opinions. The commissioners were relieved from these vexatious suits, by orders of council, their powers to make new drains ascertained, and on their petition, Sir Clement Edmunds was deputed by the privy council, to examine the various outfalls of the rivers, and report thereon. The result of this was a proposal from Sir Wm. Ayloffe, Anthony Thomas, and others, to undertake the work on new conditions, but after much negotiation about the terms, the project fell to the ground; and though the king being earnestly bent on the work, declared himself the principal undertaker, yet from various political difficulties, no further progress was made during that reign.

But in the early part of the reign of Charles I the business of drainage was again resumed with more appearance of success; artists were brought from Holland, where at that time several surprising works of the kind had just been effected, and many more were in hand. Cornelius Vermuyden's first work in England was the embankment of Dagenham Marshes, for which he had a part of the lands assigned to him, and confirmed by patent in 1621. In 1626 he undertook the drainage of the fens in Hatfield Chase, &c. between the Trent and Ouse in Yorkshire, and effected the same in five years, at an expense of £. 55,825, for which he had one third of the lands assigned him, and a colony of foreign protestants settled thereon. In the same year (1626) he proposed a plan for effecting the drainage of the great level, upon 95,000 acres being assigned to him; but the country objecting to deal with an alien, applied to Francis Earl of Bedford, one of the chief proprietors of the fens, who, with certain other adventurers, undertook the work on the same terms. This company were incorporated, 10 Car. I, and executed sundry cuts for the Welland, Nen, and Ouse, having in about three years expended about £. 100,000; but though the country was thereby much relieved in summer, it was still liable to winter floods, and the drainage being therefore considered as imperfect, 40,000 acres only were allotted to the adventurers.

In 1638 the King took on himself the completion of the drainage, both of Deeping Fen and the Great Level, and after procuring sundry reports on the subject from various qualified persons, of whom, Sir Cornelius Vermuyden, was the most remarkable, a system of embankments was resolved on, with broad washes on the sides of the principal drains, to contain and take off the flood waters. For this undertaking the King was to have allotted half the portion of the former adventurers, and an additional 57,000 acres for the Bedford Level, 12,000 acres for Deeping Fen, and 35,000 acres for other marshes and fens in Holland and Marshland. Under this agreement sundry works were executed, until the prosecution of the undertaking was interrupted by the civil wars. In the mean time several other companies had undertaken the drainage of the fens round Boston; so that on the whole the greater part of the marshes of England were now in the way of being recovered; but during the troubles which succeeded, the country people in many cases took forcible possession, and the banks drains and sluices were suffered to fall into decay.

In 1649 the claims of the adventurers of Bedford Level were revived; and having obtained the sanction of Parliament, for proceeding on their original contract, they, in 1653, completed this work. Their proceedings were ratified and confirmed by an act of parliament, 15 Charles II. The adventurers made a corporation, the several lands allotted to them, subject to the expense of keeping up the works, &c. as may be particularly seen in Cole's Collection of the Laws of Bedford Level, which may be also consulted for a variety of particular arrangements, which it is unnecessary now to detail.

Mr. Robert Fraser, called in; and Examined.

ARE you generally acquainted with the western coast of Ireland?—Not personally; but I have received a good deal of information from the Irish fishermen, who have been accustomed to go there from Dublin.

Do you estimate the Skerries fishermen, from the neighbourhood of Dublin, the best fishermen?—Yes, the best.

They fish extensively on the west of Ireland sometimes?—Yes; and they also

Mr.
Alexander Nimmo
(14 May.)

Sabbati,
15^o die Maij.

Mr.
Robert Fraser

Mr.
Robert Fraser.

(15 May.)

were formerly accustomed to fish upon the coast of Scotland, even off the Shetland Isles.

From the information they gave you, do you conceive there is any extensive cod fishery on the western coast of Ireland?—I know there is an extensive cod and ling fishery in Bantry Bay; and by the late captain Huddart I was informed, that he found a bank for cod extending along the whole of the western coast of Ireland, and the western coast of the Hebrides; and it was his opinion, that it extended to the Faroe Islands of Iceland.

Has any bank been sounded there?—Captain Huddart sounded the banks, and found they were about 38 fathom deep, similar to the banks on the south of Ireland.

Did you hear the distance of this bank from the western coast, the general run of it?—About 20 leagues.

From the coast of Ireland?—Yes.

Do you not consider, that if the Skerries fishermen from the eastern coast north of Dublin found it worth while to go to the west, there would be much more advantage to the establishment of the fisheries on the immediate coast?—Most certainly.

Do you consider, that the nature of the fishery laws produce some difficulties in the way of the establishment of the fisheries?—I am not acquainted with the fishery act at present proposed in Ireland; but Mr. Peel sent me, last year, a copy of the amended act, which he had brought into the House, for the encouragement of the Irish fisheries, in which he very properly brought in a clause for granting the bounty of 4s. a barrel upon the herrings, in order to place the Irish upon the same footing as the people of Great Britain.

You are aware, that under the present laws, the bounty is confined to 20 ton vessels; do you not consider that a much more direct encouragement to the small fishermen of the coast could be given?—I conceive it would be of great importance that such a regulation should be made, that they should have salt duty free for their fisheries, limiting it to boats carrying 12 tons.

Do you not consider, that independent of the amount of duty, that the various regulations to enable them to get the drawback on salt, are extremely inconvenient and discouraging to the lower class of fishermen?—The lower class of fishermen are not able to comply with the terms of obtaining the drawback.

Some discouragement has been thrown upon the fishery interest by the disappearance of the herrings from the bays; do you not consider, that the deep sea fishery is independent of those casual appearances and disappearances of herrings, which happen immediately on the coast?—Most certainly, and the fish seem to approach the coast from the deep sea, for the purpose of depositing their spawn in the shallow grounds.

Which are the nearest fishing banks to the coast of Ireland?—The Nymph Bank, and the whole of that bank that we suppose surrounds Ireland, like a horse-shoe, proceeding along the south and west.

How far is that from the coast?—Fourteen leagues from the coast I have found fish; but the investigation could not be said to be made very perfectly by captain Huddart.

Are the ports of Ireland, which are nearest the Nymph Bank, convenient for the fishery on that bank?—Extremely convenient; Waterford and Dungarvan.

Do you think, that the fishery on the Nymph Bank might be as advantageous or more so than any other fishery on the coast of Ireland?—That is a question I cannot answer, because I am not thoroughly acquainted with the fisheries in the west of Ireland, and the south-west, where I understand there is great abundance of both cod and ling in the large bays, into which that coast is divided.

Do you know of any advantageous bank for fishing on the eastern coast of Ireland, between the bay of Waterford and the city of Dublin?—There is no extensive bank that I know of, but there is a great abundance of fish off the bay of Wexford; there is also a considerable fishery off Arklow; the herrings resort to the bay of Wexford and Arklow every year.

Do you think it would be advantageous to establish fishing villages along the coast of the counties of Wexford and Wicklow?—I consider it would be extremely beneficial for the purpose of bringing the fishermen, who are living in detached situations, into those villages, where their joint labour might be employed in the fisheries, and likewise separating them from their small farms.

Do you not consider the mixing up the employment of farming and fishing as a great

great objection?—I consider it a very great one; but I see no objection in the infancy of a fishing village, that they should have ground for planting potatoes.

What situations do you consider most advantageous for fishing villages?—I consider the Grey Stones in the county of Wicklow, about three miles from Bray, to be the best situation in the northern part of the county of Wicklow; I consider the mouth of the bay of Wexford, and across Faranogue, on the bay of Ballatigue, to be the best situations on the coast of the county of Wexford; Arklow, also, in the county of Wicklow, might be greatly improved as a fishing station.

Do you not think the bay of Fethard, also, might be made a fishing station?—There are several stations on the coast of Waterford, particularly at a place called Dunabraton, about ten miles on the east side of Dungarvan, between Waterford and Dungarvan, and various other stations might be found extremely eligible upon more attentive examination.

Do you not consider some more direct and immediate encouragement to the small fishermen on the coast, is absolutely necessary to any important extension of the fisheries?—I consider that a bounty upon the barrel of fish, or the hundred weight of cod, as now granted in Scotland to the boat fishery, would have the most beneficial effect in encouraging the boat fishery in Ireland.

Is the chief control of the fisheries in Scotland in the customs?—No, there are commissioners for the fisheries.

Who pays the bounties?—The excise; but they have no control over them.

They have officers to watch the fishing?—The commissioners appoint officers.

How is the bounty drawn for?—The bounty is drawn for by a certificate from the board of fishery commissioners, and the receiver general of excise pays it.

Do you not consider that depôts of salt on convenient parts of the coast, would also be a very necessary measure to the encouragement of the boat fishery?—It would be a measure of very great importance to the boat fishery.

Do not the boats find it necessary, when they go out eighteen miles, to salt the fish at sea?—Certainly.

How could they have an opportunity of salting the fish in those open boats?—It would not answer in the open boats, the fish must be brought on shore.

Have you been in Scotland since the establishment of the new regulations?—Yes; I recently came from Scotland.

Do you consider the opening the roads to the coast has been attended with much advantage to the market?—Most certainly, the improvement of the fisheries, and every other thing in Scotland, has been most materially advanced by the parliamentary commissioners for making roads and bridges.

It has contributed both to the improvement of the country, and the extensions of the fisheries?—It has tended towards both; from the northern parts of Scotland the herrings are generally carried by sea to the Firth of Forth, where they are generally exported, and not by land.

Do you not consider, that opening the sea-coast to the interior of the country, and vice versa, opening the country to the fisheries, would be attended with great encouragement to the fisheries in the case of Ireland?—Most certainly beneficial, not only to the fisheries, but for carrying manure from the sea-coast, as upon all parts of the sea coast of Ireland there is a vast quantity of shell sand.

Do you not consider that to be one of the first steps towards the improvement of the country, or the establishment of fisheries?—Most certainly.

Thomas Telford, Esquire, called in, and Examined.

YOU have not been much over Ireland?—I have been over a part of it; I have been on the eastern side of the island, between Waterford and Belfast, but not on the western parts.

The Committee are desirous of asking you generally, with respect to the Highlands and western parts of Scotland, whether from the opening of the lines of communication to the coast, any considerable advantage has resulted to the fisheries?—No doubt there has; but a sufficient time has not yet elapsed to produce the full effect. There have been made, under the parliamentary commission, about 1,000 miles of road, and about 1,500 bridges, besides a very considerable number of harbours, landing-piers and ferry-piers.

Has there not been considerable progress made in the fishery in consequence of these improvements?—The fishing stations have been rendered much more accessible

*Mr.
Robert Fraser.*

(15 May.)

*Martis,
18^o die Maij.*

Mr. Telford.

Mr. Telford.

(18 May.)

by land, and both the north and eastern coasts are in consequence more immediately connected with the western fishing-locks.

Throughout the country the communication is now much facilitated?—Yes, very much so; formerly, there being very mountainous and inaccessible countries between the fishing stations, when the fish appeared on the western coast, the fishers on the eastern coast could not in bad weather cross the country; and proceeding by sea were often so interrupted by contrary winds and bad weather, that the fish were gone before they reached the place, or could get satisfactory information as to the state of the fish upon that part of the coast; this is essentially necessary to those who are engaged in the fisheries, because they keep up a correspondence with their employers, and these employers reside chiefly in the south-western and south-eastern parts of Scotland, at a very considerable distance from the fishing-grounds on the northern and western coasts; that is to say, in the towns situated on the Firth of Forth, the Firth of Tay, also Leith and Dunbar on the eastern sides, and Greenock, Campbeltown and Rothesay, on the western side of the island.

In what state were the fisheries on the coast of the Highlands previous to the measures adopted under the commissioners?—By the fisheries on the coast of the Highlands, I presume is meant chiefly the herring fishery?—Yes.—With regard to the western coast, the herring fishery, for many years previous to the road-making, had failed very considerably, the fish did not appear on the coast. For the last two years the fishing has considerably improved on the western coast; but the steadiest fishing on the coasts of Scotland, for 30 years past, to my personal knowledge, is at the north-eastern coast of the Highlands, along the coasts of Caithness.

That is what you call the Highland fishery?—Yes, off the coast of Caithness; this has been gradually improving during the last twenty years, and more especially so since the new roads have been opened on the whole of the north-eastern coast of Scotland, which have rendered it accessible to the fishers who reside on the south-eastern parts, which I have already named. During the last two years, and especially the last, the fisheries have been found to succeed along the whole of the north-eastern coast, from Aberdeen to the Orkneys. I last year, on my progress through the country on the business of the parliamentary commissioners, found every inlet covered with fish, and herrings packed in barrels. The Caledonian Canal and the new roads, have opened access for a supply of herring barrels; the extensive forests of birch which are to be found in almost every valley in the north of Scotland, were formerly of no value, and applied to no use, but it is now found that they are very fit for herring barrels. This has been of great advantage to those concerned in the fisheries, as well as to the proprietors of the forests.

The roads then have led to the improvement of the fisheries?—Yes, they have gone hand in hand, now that good roads are accessible by carriages to the extremities of Scotland; previous to these roads being made, unless a man went by sea, he could have had little or no communication with the fishing stations.

Do you not consider, however favourable the natural situation of the coast is for fisheries, they could not have extended to any considerable degree but by the application of capital from other parts of the country?—I am decidedly of that opinion; the fisheries are carried on chiefly by persons from the southern parts of Scotland.

Has the opening of the coast, to the interior, had much tendency to improve the country?—Very considerable, which the Committee will be aware of, when I explain that the people before these improvements took place, had no beneficial object to exercise their industry upon; in the course of opening these roads, and constructing the Caledonian Canal, to which I have been engineer and agent for the parliamentary commissioners, there have been employed annually, about 3,200 men upon an average: at first, these men could scarcely work at all; they were totally unacquainted with labour, they could not use the tools, but they have since become excellent labourers; of that number, by the gradual influx and departure of the workmen, we consider that one-fourth left us annually, taught to work; so that these works may be considered in the light of a working academy, from which 800 have annually departed improved workmen. These men have either returned to their native districts, having had the experience of using the most perfect sort of tools and utensils (which alone cannot be considered as less than ten per cent upon any labour,) or they have been usefully disseminated throughout the other parts of the country. Since these roads were opened and made accessible to wheel carriages, wheelwrights and cartwrights have been established in the country, and, in different parts, the plough has been introduced, and other improved tools and utensils are now used.

Was

Mr. Telford.

(18 May.)

Was not the plough used before?—Not in general; in the western and mountainous parts, they frequently used crooked sticks with iron upon them, drawn or pushed along; these improvements have also, of course, led to the inclosure and cultivation of more land. I also conceive that by this mode of employment, the moral habits of the great mass of the working classes are changed. They see that they may depend upon their own exertions for support, and this appears to me to be an object of the first importance; but it goes on silently, and is scarcely perceived, until apparent by the results. I consider these improvements altogether as one of the greatest blessings ever conferred upon any country. They were performed in a very careful manner, Government only paid one half. Whatever public object was proposed, the party was obliged first to make a formal application to the Parliamentary Commissioners, who ordered me, as their engineer, to ascertain, whether it was that useful object represented, and to make an estimate of the expense, and report to them; if they approved, then the estimate was tendered to the party applying, who was asked, "Are you willing to advance and pay into the bank of Scotland one-half of the estimated expense, and give security to pay any further sum required to complete the work, you may then form a committee to superintend and remonstrate to us, but you must have no management, the whole being carried on under the immediate management and direction of the Parliamentary Commissioners," who employed experienced inspectors and sub-inspectors, who constantly and minutely superintended every operation, and previous to the final completion of each contract, a certificate was signed by the parties interested, that the thing was done as intended, paying half the money in the way I have mentioned, and under these regulations the works proceeded satisfactorily and successfully.

What was the sum of public money granted?—About £. 200,000, in the course of 15 years. It has been the means of advancing the country at least a hundred years.

Do you think that the country, from its own resources, would have been wholly inadequate to have effected these improvements?—I believe it would, for many years to come, have done next to nothing; but this offer of half the money from the public was a great inducement, and the land-owners being empowered to borrow money on entailed estates, enabled them to arrange with the bank of Scotland to advance the money as it was wanted. These valuable improvements are now all nearly completed; the last report will be made, I expect, next year.

Do you conceive that the nature of the control exercised by the Parliamentary Commissioners, in the previous consideration of works, examined by scientific persons, and the application of their funds free from local influence, did effect much more extensive benefit than could be expected from any possible application of equal funds in the discretion of private proprietors?—I am satisfied of that being the case.

Do you not consider the manner of forming the commissions, so as to consist in a considerable degree of persons unconnected with the district in which the money was to be laid out, and also the seat of the commission being in London, to have had a salutary and beneficial effect?—I am thoroughly convinced that the purport of this question is of the utmost importance.

Do you think the erection of small and cheap piers in different parts of the coast, would in time contribute greatly to the improvement of the interior of the country, even more than to the improvement of the fisheries?—Yes, much more than the fisheries; that is of far less value than the effect that would be produced upon the country, and its inhabitants.

Do you not think that the wealth and resources of Scotland, and its power to endure taxation, have been considerably increased by the application of these improvements?—I have no doubt about it; I have no doubt it has been greatly so.

Has not the export of the fisheries been great?—Yes, it has amounted to a large sum, but much more substantial improvements have been made in the country itself, by constructing small harbours and piers, with their connecting roads; every part of the interior is opened to the sea-coast, leaving thus the means of export, and also landing places for lime, coal, tar, and other necessary articles. These new roads have annihilated all the ferries; you may now travel from Carlisle to the northern extremity of Scotland without a ferry. By means of these roads and bridges access is opened to and from the interior districts to the several market towns; in short, the advantages are beyond all comparison.

Is it not also a great advantage for the transfer of cattle?—Yes, it is of great advantage for the transfer of cattle; it frequently happened, before the construction

Mr. Telford.

(18 May.)

of these roads and bridges, that when the cattle came to certain streams they could not pass them, in consequence of the torrents which came from the mountains; and in consequence of these hindrances, and the tracks being so rugged, their feet were much injured before they got to market, and they became poor. Many of these mountains are from two to three thousand feet high, so that the torrents come down with prodigious force; yet these mountains afford good pasturage.

You mean, as the Committee understand, that the fisheries have profited by their works, and that you consider that the improvement of the country has been further advanced?—The country has been improved to a degree which I consider much more important than even the profit which the fisheries have derived.

What breadth for roads do you consider, generally speaking, is necessary in mountainous countries?—From the extensive experience I have had in the Highlands of Scotland, I find that sixteen feet, in general, is quite sufficient for the mountainous part of the country; and through arable lands, and on the coast roads, I find twenty feet to be quite sufficient.

Cannot such roads, where the mountains have gravel bottoms, be constructed at a very small expense?—We find, including ordinary bridges, that the roads vary in expense from £.300 to £.600 a mile. Unless they have to pass over large streams, I think you may take it under £.500 a mile.

Are the roads done in a complete manner?—I believe nothing of the kind need be more perfect, with retaining walls, breast walls, parapets, side and cross drains.

Do you not consider, that not only the most useful lines, but the most economical species of road that can be made, are those which are laid out and executed by scientific and experienced persons?—No doubt of it. On the subject of repairs, under the original system, they were to be done by the counties; after the roads were constructed, they were to do what they liked with them. An act was brought in to enable them to form committees among themselves, to get estimates, and to demand assessments of the counties, necessary to repair the roads in certain districts. That act was in force for five years, and there was not a single committee appointed, nor a single yard of road repaired; after heavy rains, torrents of water were suffered to run upon them, and in fact the roads were disappearing. I avoided making observations for two or three years, but at length I was induced to make representations to the parliamentary commissioners, and to state, that unless some effectual measures were taken, the roads first made would very soon be obliterated. The commissioners then saw that something must be done, and they brought in a bill, and passed it, taking the repair of the roads into their own hands, assessing the counties three-fourths, and Government paying the remainder; but the payment of the inspection by Government and management made it about half. That act was to be in force seven years; it has been so for six years. After this the military roads were also put under the commissioners; this made in the whole about 1,400 miles. These military roads have now been much improved, and the whole kept in good condition, much cheaper than you can expect to do in Ireland; they do not cost £.5 a mile; and those made under the commissioners are in general as smooth as this table. A bill is now before Parliament to determine what is to be done as to future repairs. The Committee will be aware how strictly all those matters must be attended to, not only the making but the keeping up of the roads after they are made. It is in the north of Scotland now arranged quite systematically, that it goes on with perfect regularity; the principal superintendent has twelve or fifteen hundred miles of road under his charge; he annually makes a detailed specification of what is wanted to be done on every part of each road; these specifications are advertised, and contracted to be performed accordingly; he has six sub-inspectors under him; the number is small; in some cases there is not very much travelling, or it would not do; these inspectors are continually on the roads, never a day off them, they have nothing else to do; the general superintendent checks them, and I ascertain that he performs his duty; in that way we keep up a continual strict inspection, to see that what is contracted for is faithfully performed. The contractors are paid by instalments, retaining one-eighth part in hand until the contract is completed, and if any of them is deficient the money is stopped. Thus we are enabled to keep the whole machine going with regularity and proper effect. We pay the inspectors so much for wages, and so much for travelling expenses, when they can prove by their journals that they are on the roads at a distance from him; for every man keeps a journal of his proceedings, also of how many men and horses, &c. are employed upon his district; he must prove he has been upon the road; if it appears that he has not been there, he has no travelling expenses; and those inspectors are connected with no other employment but

but the repairs and improvements of these roads; if connected with any thing else, the roads become a secondary object, and are neglected. In this manner road-makers are formed in the same manner as other tradesmen; the great evil has hitherto been, that road-makers have been held too cheap, nothing has been thought so easy as to make roads; whereas, in my experience, there is nothing I find so difficult; formation, materials, drains, walls, bridges, every thing in fact; every particle of matter put on or removed required experience, and you must have men that know and understand all these matters before you have a perfect system of road-making.

You think it would not be possible to repair the roads in Ireland at the price you have mentioned?—In the low countries it would be impossible; in the low countries of Scotland it costs six times that sum; we are now making 100 miles, from Carlisle to Glasgow, but with that exception I never had any of the low country roads under my own management.

Is £.5 the average of all the Highland roads?—Yes, £.5 is the average of the roads in the Highlands, made under the Parliamentary Commissioners.

Does that include the military roads?—No, not the military, I believe they cost about £.10; the military roads were fairly worn out before they came under the Parliamentary Commissioners, and it has required this expense for several years to restore them.

Were they not originally very badly constructed?—Terribly bad; we have them nearly to re-make; they are not perfect yet by any means, but they certainly are very different roads to what they were; but if they had been finished in the way ours were £.5 or £.6 would have done the business of annual repairs.

Do you not conceive, that the roads in the mountainous parts of Ireland might be kept at the same rate?—Yes, no doubt of it; the injury in mountainous countries does not so much arise from the wear of carriages or horses, &c. as from the washing after very heavy storms of rain or snow; in order to obviate that, we have men ready to go immediately to the places where it may be necessary to get the repairs performed, otherwise the road would be destroyed.

Mr. Robert Fraser, further Examined by the Committee.

HAVE you paid much attention to the fisheries, and the best means of their improvement?—I have had many opportunities of acquiring information regarding the fisheries for these thirty years back, at which period my attention was called to this subject, by being appointed extra secretary to the British Society for extending the fisheries, and improving the sea-coast of the kingdom.

Are you acquainted with the Irish fisheries?—I was appointed by the Irish Government, when Lord Hardwicke was Lord Lieutenant, to make an investigation regarding the fisheries on a particular part of the coast, and I have also since endeavoured to obtain information regarding the fisheries on other parts of the coast of Ireland, and the best means of their improvement.

What is your opinion of the abundance of fish on the coast of Ireland?—I have found that on all parts of the coasts of Ireland, where the coast is formed into large bays, which are numerous on the southern and western coasts, that the fishermen never fail to find fish in great plenty; and from the trials I have myself made, and from what I have been informed by the late Captain Huddart, and several naval officers, I am of opinion that there are very valuable fishing grounds at no great distance from the coast, and which ought to be further examined.

In the trials you made yourself, what kind of fish did you find in great abundance?—In the trials off the coasts of Wexford and Waterford, we found cod, ling and haddock; but the fishing on the open grounds was much interrupted by great quantities of dog-fish and sharks; we were therefore most successful in catching the cod fish, particularly on the rocky coasts near the islands of the Saltees, where the shark and dog-fish are not found in such abundance.

What other fish did you meet with besides those you have now mentioned?—Abundance of turbot, johnadoree, plaice, the largest finest soles the fishermen had ever seen, and also skate and halibut in great abundance.

What fishermen do you allude to, and what vessels did you employ in the trials to which you allude?—Two Irish wherries, under the command of Lawrence Mooney, of Irishtown, a very hardy and experienced fisherman, well acquainted with the Nymph Bank, and the whole of the fishing grounds on the south of Ireland; we began making the trials on the Nymph Bank, on the 30th of May 1802, and con-

Mr. Telford.

(18 May.)

*Lanae,
24^o die Maij.*

*Mr.
Robert Fraser.*

Mr.
Robert Fraser.
(24 May.)

tinued until the end of August; but the weather was very much broken that season, and the regular trials much interrupted, but perfectly satisfactory as to the abundance of fish.

Do you consider the Irish wherries well adapted for carrying on the fishery?—The wherries are excellent sea-boats; they fish with long lines, and are well calculated for shooting and hauling the lines, under the easy management of the foresail. They are furnished with nets for trawling, in order to catch ground fish, viz. turbot, plaice, soles, &c. They are provided also with nets for catching herrings.

Are you of opinion, the fisheries of Ireland might be carried on more extensively? Ireland is better calculated for carrying on the fisheries in an extensive manner than any part of the United Kingdom, or perhaps than any country in Europe. For independent of the fertility of the ocean with which Ireland is immediately surrounded, the navigation to the coasts of Scotland, where herrings always abound in greater or lesser quantities, and the navigation to the north of the Shetland Isles, where the Dutch fish for herrings, is speedy, safe and certain. Besides also the excellent situation of Ireland for carrying on the cod fishery on the coast of Iceland, and on the banks of Newfoundland. As a further advantage, the Irish have a near and most extensive market, from its proximity to the most populous counties in England, where the people being much employed in manufactures, do not pursue the fisheries to any considerable extent. Above all, Dunmore, in the county of Waterford, is admirably situated for carrying on the fisheries of every description.

To what cause do you attribute that the Irish fisheries are not carried on to the extent of which you deem them capable?—The immediate cause of the decline of the boat fishery, is solely to be attributed to the heavy duties on the importation of rock-salt, which took place about twenty years ago, on account of which the numerous refineries of salt which supplied the country with salt at a very low price were given up. In the year 1796 I made a tour through the baronies of Forth and Bargie, in the county of Wexford, where I found every little farmer had a cask of salted fish, consisting of cod, hake, and ling, and also salted herrings, being supplied from the refineries at Wexford at a moderate price. Red herrings were cured at Wexford, and sent to England and Dublin, and a considerable boat fishery was carried on. When I was collecting materials for my statistical survey of that country, in 1803-4, the salt works were wholly abandoned. The curing of red herrings was given up, and I did not find any of the little farmers able to procure a single barrel of salted fish for their winter store. I am therefore decidedly of opinion, that it will be a very difficult task to revive and extend the boat fishery, without the duty on rock salt is repealed; but until that measure takes place, the fisheries on the coasts would be greatly encouraged by having depots of rock salt formed on various parts of the coast; rock salt crushed, given duty-free to the boatmen, under certain regulations and restrictions, which might be easily complied with.

What would you propose as the best means of encouraging the fisheries and improving the sea-coasts of Ireland?—That a bill should be introduced into Parliament, for the encouragement of landed proprietors to build towns, villages and fishing stations in Ireland, and for enabling the proprietors of land in Ireland to charge their lands with a proportion of the expense in making and maintaining harbours, roads and bridges; on a principle similar to the Acts of Parliament passed for similar purposes in Scotland.

A P P E N D I X :

VIZ :

THE FOUR REPORTS OF THE COMMISSIONERS

(1810—1814)

Appointed to inquire into the Nature and Extent of the several Bogs in *Ireland*,
and the practicability of draining and cultivating them :

WITH

EXTRACTS FROM THE SEVERAL APPENDIXES TO THE SAME,

Containing the principal Matters of general interest therein :

WITH EIGHT PLATES.

L I S T. ---

N ^o			
(1.)—FIRST REPORT from the Commissioners (20 June 1810)	-	-	p. 121
(2.)—SECOND REPORT from - - D ^o - - (1 April 1811)	-	-	126
(3.)—THIRD REPORT from - - D ^o - - (28 April 1814)	-	-	144
(4.)—FOURTH REPORT from - - D ^o - - (- D ^o -)	-	-	146

—(5.)—

EXTRACTS FROM THE APPENDIXES:

REP. I. - - Mr. <i>Griffith</i> , on the eastern part of the bog of Allen; his general observations; letter from the bishop of Kildare; plans for drains, &c.—with one Plate, Section and analysis of part of the Timahoe bog,	-	p. 157
REP. II. - - Mr. <i>Griffith</i> , on the western part of the bog of Allen, in King's and Queen's counties; with Two Plates, viz. a Ground Plan and Section, of the drains in Geashil bog;—dimensions and number of drains; various species of bog manures, improvements, &c.	- - - - -	162
D ^o - - - Mr. <i>Jones</i> , on bogs in Meath, Westmeath, and King's county;—General observations and plan for opening drains; with a Plate	- -	170
D ^o - - - Mr. <i>Longfield</i> , on bogs bounded on the north by the grand canal between Tullamore and its junction with the Shannon, called the district of the river Brisna; plans for drains, general observations, improvements, &c.	-	171
D ^o - - - Mr. <i>Townshend</i> , on the bogs in King's county, Westmeath and Longford, between the Inny and the Brisna, bounded on the west by the Shannon; general observations, legislative views, &c.	- - -	176
D ^o - - - Mr. <i>Edgeworth</i> , on the bogs surrounding Edgeworth town, bounded on the north by the Camlin and on the south by the Inny; general view of the subject; analyses, &c. wonderful convulsion of the bog of Rhine; &c. Mr. Edgeworth's machines for unloading boats, taking sections of rivers, portable railways, with his description and application of the same	-	179
D ^o - - - Letter from Sir Humphry Davy, on the nature of bogs, &c.	-	191
REP. III. - Mr. <i>Longfield</i> , on the District of Lough Gara, in Roscommon; instances of successful improvement, &c.	- - - - -	193
D ^o - - - Mr. <i>Aher</i> , on the bogs between Roscrea and Killenaul, in Tipperary, Kilkenny, and Queen's County; with a Plate, exhibiting the Section of a Turf Bank and plan of cutting drains;—general descriptions and observations; comparison of expense and profit of various plans; instances of improvement; varieties of crops, &c.	- - - - -	195
D ^o - - - Mr. <i>Aher</i> , on a different district in Queen's county; observations on drainage, reclamation, crops, &c.; plants natural to bogs; analyses, &c.	-	203
D ^o - - - Mr. <i>Colburne</i> , on the bogs in the west of the county of Clare; general observations on drains, &c.	- - - - -	208
D ^o - - - Mr. <i>Brassington</i> , on bogs in Kildare and King's county; general observations, legislative views, &c.	- - - - -	210

- REP. III. - *continued*—Mr. Jones, on the district of Lough Corrib; successful method pursued at the bog of Monivae; general observations - - - 211
- D° - - - Mr. Bald, on the bogs in Mayo; general observations, &c. - - 213
- D° - - - Mr. Townsend, on the bogs in Tyrone, Armagh, &c.; general observations on the effects of existing acts of Parliament, &c. - - 214
- REP. IV. - Memoir of Professor Wade, on the vegetable matter of bogs - - 218
- D° - - - Mr. Nimmo, on the bogs of Iveragh in the county of Kerry; observations on the formation of bogs, on the peculiarities of the same in a mountainous country; various plans for irrigating, warping, course of crops, comparison of expense, &c. - - - - - 223
- D° - - - Mr. Edgeworth, on bogs east of the Shannon; plan for an act of parliament to oblige owners to ascertain their boundaries - - - 239
- D° - - - Mr. Richard Griffith, junior, on the bogs in Galway and Roscommon near Athlone; sundry improvements and methods of reclaiming - - 240
- D° - - - Mr. Richard Griffith, junior, on the mountains of Dublin and Wicklow; general observations on mountains; florin grass, &c. - - - 246
- D° - - - Mr. Richard Griffith, junior, on Tyrawley in Mayo, and Tyrerah in Sligo; probable origin of bogs, &c. - - - - - 248
- D° - - - Mr. Nimmo, on the bogs of Galway west of Lough Corrib; various modes of culture, with comparison of expense - - - - 250
- D° - - - Proceedings of Mr. Roscoe at Chat Moss in Lancashire; with Two Plates, containing Plans and Section of a bog plough, horse pattens, &c. 253

LIST OF PLATES.

- (N° 1.)—Section of a Turf Bank in Timahoe Bog - - - - *to face* p. 157
- (N° 2.)—Map of Geashil Bog, ground plan - - - - *to face* p. 163
- (N° 3.)—Section of the Drains in Geashil Bog - - - - *to face* p. 164
- (N° 4.)—Plan for executing Drains in Bogs - - - - *to face* p. 171
- (N° 5.)—Mr. Edgeworth's machine for loading and unloading boats, &c. *to face* p. 187
- (N° 6.)—Section of a Turf Bank and Plan of cutting Drains - - *to face* p. 195
- (N° 7.)—Section of the edge of Chat-Moss, side view of a bog plough, &c. *to face* p. 254
- (N° 8.)—Perspective view of Mr. Roscoe's Horse Patten, &c. - - *to face* p. 256

A P P E N D I X.

— (1.) —

THE FIRST REPORT of the Commissioners appointed to inquire into the nature and extent of the several Bogs in *Ireland*, and the practicability of draining and cultivating them.—(10 June 1810.)

THE Warrant under which we are appointed Commissioners, having been issued on the 15th day of September 1809, we assembled in Dublin on the 19th day of the same month; and after having taken the Oath prescribed, proceeded to form a plan for the execution of the Trusts reposed in us by the Legislature.

We consider it a fortunate occurrence that shortly previous to our appointment Mr. *Rennie* had been in Dublin, and although his engagements in England precluded us from having an opportunity of formally consulting him at our Board, yet we found that two of the Commissioners had had the fullest communication with him on the subject of our Commission, and conceived themselves to be in full possession of his ideas on the subject.

After committing to paper the outline of such instructions as appeared to us to be necessary for the guidance of our Engineers, and conformable to Mr. *Rennie's* ideas, we consulted different engineers and surveyors as to the practical execution of it in detail, and finally reduced the whole into the form of "the Instructions," which form the 1st Article of the Appendix to this Report.

[It has not been thought necessary to reprint the Appendixes.]

The execution of our commission demanding considerable accommodation and space for the Maps, Sections, and Instruments necessary for the investigation of the subject committed to us, it became an object to obtain the permission of the Dublin Society to hold our meetings in their house; and they (with the liberality which ever distinguishes them when the improvement of Ireland is the object) immediately acceded to our request.

On our part, with a view to economy, we appointed their Assistant Secretary the Secretary of our Commission, and the Superintendent of their Repository his Assistant Clerk: to the former we gave a salary of £. 200 per annum, to the latter one of 50 guineas, and these two sums, amounting in the whole to £. 256. 17s. 6d. form the entire annual expense of our establishment.

Our next object (and on the due attainment of which depended in a great degree the success of our undertaking) was the proper division of the Bogs of Ireland into the Districts referred to in the 1st Article of the Instructions; and further, to determine in what part we should first apply those means intrusted to us, and which we at once perceived were utterly inadequate to the execution of any Plan that should embrace the entire extent of Ireland.

Division of the Bogs into districts.

In forming our opinions on these points, we derived our principal assistance from the Great Ordnance Survey of Ireland, executed by General Vallancey, the Chairman of our Board, it being the only Map which defines either the situation or boundaries of the Bogs with any tolerable accuracy.

From inspection of this Map we are enabled to consider the greater part of these Bogs as forming one connected whole, and to come to the general conclusion, that a portion of Ireland, of little more than one fourth of its entire superficial extent, and included between a line drawn from Wicklow head to Galway, and another drawn from Howth head to Sligo, comprises within it about six-sevenths of the Bogs in the island, exclusive of mere Mountain Bogs, and Bogs of less extent than 500 acres, in its form resembling a broad belt drawn across the centre of Ireland, with its narrowest end nearest to the Capital, and gradually extending in breadth as it approaches to the Western Ocean. This great division of the island extending from east to west is traversed by the Shannon from north to south, and is thus divided into two parts; of these the division to the westward of the river contains more than double the extent of the Bogs which are to be found in the division to the eastward; so that if we suppose the whole of the Bogs of Ireland (exclusive of mere Mountain Bog and of Bogs under 500 acres) to be divided into twenty parts, we shall find about seventeen of them comprised within the great division we have now described, twelve to the westward, and five to the eastward of the Shannon, and of the remaining three parts, about two are to the south and one to the north of this division; of the positive amount of their contents we have as yet no data that can enable us to speak with any precision, but we are led to believe, from various communications with our engineers, that the Bogs in the eastern division of the Great District above described, amount to about 260,000 English acres, which on the proportion already

—(1.)—
FIRST REPORT
ON THE BOGS
OF IRELAND;
(June 1810.)

already mentioned would give rather more than one million of English acres, as the total contents of the Bogs of Ireland, excluding however from consideration mere Mountain Bogs, and also all Bogs of less extent than 500 acres, of each of which description the amount is very considerable: of the extent of the latter some idea may be formed from a fact which we have learned from Mr. Larkin, that in the single county of Cavan which he has surveyed, there are above ninety Bogs, no one of which exceeds 500 Irish acres, but which taken collectively contain about 11,000 Irish, which is equivalent to about 17,600 English acres, besides many smaller Bogs varying in size from five to twenty acres.

Bogs eastward of
the Shannon.

Most of the Bogs which lie to the eastward of the Shannon, and which occupy a considerable portion of the King's county and county of Kildare, are generally known by the name of the Bog of Allen; it must not however be supposed that this name is applied to any one great morass; on the contrary, the Bogs to which it is applied are perfectly distinct from each other, often separated by high ridges of dry country, and inclining towards different rivers, as their natural directions for drainage, so intersected by dry and cultivated land, that it may be affirmed generally there is no spot of these Bogs (to the eastward of the Shannon) so much as two Irish miles distant from the upland and cultivated districts.

Eastern portion of
the Great District.

With this first and general view of the subject, we had no hesitation in selecting at once the whole of the eastern portion of the Great District above referred to, as the object of our first inquiries, forming in itself one whole, whose parts had more or less connexion with each other, lying in the centre of Ireland, in the immediate vicinity of some of the richest and best cultivated counties; intersected also by the two great lines of navigation, the Grand, and the Royal Canals, and presenting in common apprehension very considerable obstacles to improvement; the overcoming of which would in itself demonstrate the practicability of the improvement of the Bogs of Ireland in most other cases.

We were further induced to form this selection on the general principles of beginning at the end of the great division above referred to, which lies nearest to the Capital, and proceeding gradually to its termination at the Western Ocean; not however considering ourselves precluded from making occasional exceptions, where particular circumstances might appear to require it.

The proportion which the Bogs in this District bear to the entire of the Bogs of Ireland, appeared to us a further inducement; and we are the more disposed to mention this, as we find that by some we have been thought to have embarked in the first instance on too great a scale: on this we shall merely observe, that having two years allotted to us for the duration of our commission, we undertook at once rather less than one-third of our task, in the supposition that it would require about eight months for its execution.

Having determined to give in charge the whole of this District, it became the next object of our consideration on what principle we should subdivide it into the smaller Districts referred to in the First Article of our Instructions, for the purpose of being assigned to separate engineers; Major Taylor's excellent Map of the county of Kildare furnished us with every necessary information, so far as that county was in question; but of the King's county there was no Map published, and as it contains not less than 124,000 English acres of Bog, it became a most important object to possess ourselves of the necessary information with respect to them.

Division of Bogs
into 7 districts;
Mr. Richard Griffith.
Mr. Brassington.
Mr. Townshend.
Mr. Longfield.
Mr. Jones.
Mr. Edgeworth.
Mr. Aher.

We therefore thought ourselves fortunate in finding that Mr. Larkin, a surveyor of eminence, had surveyed the county for the Grand Jury; and we contracted with him to furnish us with a Map of it, on the large scale required by our Instructions; and Mr. Larkin making himself responsible for the accuracy of the survey, we agreed to give him for it £.300, being at the rate of less than three farthings per acre for every acre of Bog it contained. With these and the assistance of other documents, we divided all the Bogs containing above 500 acres, in the counties of Kildare, King's county, Tipperary, Westmeath, and Longford, into seven districts. Of these we gave the one which forms the north-eastern part of the Bog of Allen, in charge to Mr. Richard Griffith; the south-eastern to Mr. Brassington; the north-western to Mr. Townshend; the south-western to Mr. Longfield; a district lying principally in Westmeath, to Mr. Jones; and the Bogs in the county of Longford and on both banks of the river Inny, to Mr. Edgeworth.

We also gave a large district of Bog in the county of Tipperary, which runs nearly parallel to the Suir from Roscrea to Cashell, in charge to Mr. Aher, wishing to take advantage of the circumstance of his being able to give a portion of his time to that district, although not to any other, on account of his other engagements.

We next laid down the principles which were to govern our expenditure, in such manner as to secure that the amount of our disbursements should depend in every instance on the degree of labour to be performed.

Engineers, &c.

With these views, we fixed the pay of Engineers at two guineas a day for every day actually employed, and one guinea a day in lieu of allowances for travelling and board and lodging. That of their Surveyors at one guinea a day for each, while employed, to be at once their pay and in lieu of all allowances of every description. For the Staff-men, Chain-men, and Labourers, we intrusted the Engineers to make the best bargains in their power, not exceeding three shillings per day in any instance; and these terms we trust will appear extremely moderate when compared with those usual in Great Britain, and considering the hardships attendant on this peculiar service. The appointment of the Engineers

gineers we necessarily hold in our hands, and select them under the obligation of our oaths; the appointment of the Surveyors we commit entirely to the Engineers, holding the latter responsible for the qualifications of the persons they employ.

We account with every Engineer once a week, and he makes his return to us upon his oath.

To give an idea of the scale and nature of our Expenditure, we subjoin as the 2d and 3d Articles of our Appendix, Copies of Accounts already called for by your Honourable House*.

Owing to the winter season having set in, almost immediately after the appointment of the Engineers, and which was particularly unfavourable to the execution of the survey, we have as yet received but one of their Reports, although they are most of them, we believe, in a state of considerable forwardness.

This Report we have determined on laying at once before your Honourable House, considering it as sufficient in itself, to enable the Public to form a pretty accurate opinion of the degree of information which may be expected from the execution of our Commission; and feeling also, that if we deferred it any longer, we should have no other opportunity before the opening of the next Session; we have accordingly subjoined it as the fourth Article of the Appendix to this Report.

The district reported on, contains 36,430 English acres of Bog, and forms the eastern extremity of the Bog of Allen. The Map furnished to us by Mr. Griffith is on a scale of four inches to an Irish mile, and is accompanied by Sections of the Bog of nearly 200 miles in extent.

As these Maps and Sections could not be engraved without enormous expense, we have subjoined to this Report a Map executed on a scale as much reduced as is consistent with clearness, and which scale we propose to apply universally in the different Maps which in the execution of the Commission it will become our duty to furnish to your Honourable House; and this Map we have accompanied with three lines of Sections of the Bog, to serve at once as specimens of the manner in which the Sections are executed, and to convey a clearer view than could be expressed in words, of the internal structure of a great Bog; a view we believe materially different from any of those generally received.

There are many, we believe, who consider the Bogs of Ireland to be low and marshy tracts of country, not very dissimilar in their composition from the fens of Lincolnshire; others, aware that the substance of which they are formed, greatly differs from that of the fen districts, attribute nevertheless the origin of both to pretty nearly the same causes; while an opinion, more prevalent, and perhaps not less erroneous than either of the foregoing, attributes their formation to fallen forests, which are supposed at some former period to have covered these districts, and to have been destroyed either by the effects of time, or by hostile armies in the early wars of Ireland.

The facts stated in Mr. Griffith's Report are obviously inconsistent with any of these suppositions; the Bogs which he has surveyed being every where in elevated situations, and the trees which have hitherto been so constantly found buried in the edges of these Bogs, where alone it is probable they have generally been sought for, are very rarely to be found, in the interior parts at least of this district.

Without entering in this Report into any inquiry as to the origin of Peat Bogs, we are however anxious to give to such persons as have not had an opportunity of examining them, some idea of the general appearances which they actually present.

It appears from Mr. Griffith, that each of the four Bogs included in the subject of his Report, is a mass of the peculiar substance called Peat, of the average thickness of twenty-five feet, no where less than twelve, nor found to exceed forty-two; this substance varying materially in its appearances and properties, in proportion to the depth at which it lies: on the upper surface, covered with moss of various species, and to the depth of about ten feet, composed of a mass of the fibres of similar vegetables in different stages of decomposition proportioned to their depth from the surface, generally however too open in their texture to be applied to the purposes of fuel; below this generally lies a light blackish brown turf, containing the fibres of moss still visible, though not perfect, and extending to a further depth of perhaps ten feet under this. In the instance exhibited in the Section at the close of Mr. Griffith's Report, are found small branches and twigs of Alder and Birch, but we do not understand him as being of opinion that such is by any means generally the case; at a greater depth the fibres of vegetable matter cease to be visible, the colour of the turf becomes blacker, and the substance much more compact, its properties as fuel more valuable, and gradually encreasing in the degree of blackness and compactness proportionate to its depth; near the bottom of the Bog it forms a black mass, which when dry has a strong resemblance to pitch or bituminous coal, and having a conchoidal fracture in every direction, with a black shining lustre, and susceptible of receiving a considerable polish.

We have requested Mr. Griffith to make a chemical analysis of these different strata, which he has done in the Laboratory of the Dublin Society, and an account of which, with the Section above alluded to, forms the Appendix to his Report. Immediately below this lower stratum, there is generally found a thin stratum of yellow or blue clay, varying in thickness from one to six feet; in some places the Peat rests on a thinner stratum of yellowish white marl, containing on an average about sixty per cent. of calcarious matter: this stratum

—(1.)—
FIRST REPORT
ON THE BOGS
OF IRELAND;
(June 1810.)

* It has not been
thought necessary
to reprint the
Appendixes.

See Extract (5)
& (6) infra.

Nature and struc-
ture of Bogs.

—(1.)—
FIRST REPORT
ON THE BOGS
OF IRELAND;
(June 1810.)

stratum of clay in this district universally rests on a solid mass of clay and limestone gravel mixed together, and extending to an unknown depth.

We should further consider the Peat moss as partaking in its general nature of the property of sponge, completely saturated with water, and giving rise to different streams and rivers for the discharge of the surplus waters which it receives from rain or snow; these streams in this district almost universally have worn their channels through the substance of the Bog down to the clay or limestone gravel underneath, dividing the Bog into distinct masses, and presenting in themselves the most proper situations for the main drains, and which, with the assistance of art, may be rendered effectual for that purpose.

Such is the internal structure of the Bogs in this district.

Viewing them externally, they present surfaces by no means level, but with planes of inclination amply sufficient for their drainage; the highest summit of any part of the Bogs in this district, is 298 feet above the level of the sea, taken at an ordinary spring-tide in the Bay of Dublin; while the lowest point any where on their surface, is eighty-four feet lower than the highest, and therefore 214 feet above the level of the sea.

It requires a mere inspection of the Map and Sections, to be convinced that there is no part of these Bogs from which the water may not be discharged into rivers in their immediate vicinity, and with falls adequate to their drainage; and we observe that in the instance of the Bog of Timahoe, a part of its water is discharged into the sea at Drogheda, and another part below Waterford.

Expense.

IT is now our duty to report on the probable expense of the proposed operations; and if we are conscious of the general fallacy of estimates, we must be so peculiarly in the case of works such as those which form the subject of our Report.

We have therefore required the estimates to be given in to us, in their most minute details, and we have the satisfaction to observe, that the data on which Mr. Griffith's estimate is formed, are taken from the expense of works executed by the Grand Canal Company in these very Bogs.

This Company has had abundant experience of the extent of the expense of every variety of drains, excavations, and embankments necessary for draining the Bog preparatory to the carrying their Canal through it; and we know Mr. Griffith to have had access to their accounts, and that it is with the full knowledge of them, as well as of other sources of information, that he has made his calculations.

It is Mr. Griffith's opinion, that by the main drains laid down in the situations referred to in the Map, and with a system of minor drains discharging their waters into the main drains, and at a general distance of a quarter of an Irish mile from each other; and further, with a system of cross drains discharging themselves into the minor drains, and at a distance of 280 yards apart, the entire Bog may be rendered sufficiently compact for the commencement of agricultural operations. The cost of the different improvements proposed in the rivers, and of the main and minor drains, he estimates at

-	-	-	-	-	-	-	-	£. 49,268
And of the cross drains, at	-	-	-	-	-	-	-	- 20,746

Altogether - - - - £. 70,014 as being

the expenses of discharging the waters from these 22,490 Irish acres, equivalent to 36,480 English acres of Bog, sufficiently to enable the farmer to commence his operations on them. In this view of expense it is however particularly worthy of consideration, that there is a further extent of no less than 4,000 Irish acres, not of Bog, but of good land lying along the banks of the river, whose course it is proposed to improve, and the expense of improving which is included in the £. 70,014. These 4,000 Irish acres appear to be at present covered with water for not less than half the year, and to set at an average rent of less than thirty shillings per acre, while the uplands in the immediate vicinity set for not less than three guineas.

In the opinion of Mr. Griffith, these low lands, if preserved from these inundations, would become more valuable than the uplands; supposing them however to receive an increase of only twenty shillings per acre in their annual value, and estimating this increase at twenty years purchase, an improvement would be effected to the value of £. 80,000, which is more than sufficient to cover the entire expense of the proposed drainage, not merely of these inundated lands, but of the Bogs also; so that if the operation were to be carried into effect, and considered in a general view, it would appear that the profit of recovering these 4,000 acres of inundated lands, would be more than equivalent to defray the entire cost both of their own reclamation, and of the drainage of all the Bog in this district; whatever therefore might be the increase of improvement, which the entire extent of Bog might receive from the drainage, would be every part of it so much clear gain resulting from the adoption of the operations suggested by Mr. Griffith. The dimensions recommended by Mr. Griffith for the main drains, are a breadth of fourteen feet at top, of two feet at bottom, and a depth of twelve feet; for the minor drains, a breadth of nine feet at top, one foot at bottom, and a depth of eight feet; and for the cross drains, a breadth of six feet at top, one foot at bottom, and a depth of five feet.

Adverting to an opinion which some may entertain, that the breadth recommended for the bottom of these drains is not sufficient, Mr. Griffith observes, that it has been found by experience in the Bogs passed through by the Grand Canal, where there was any fall, deep drains with narrow bottoms were kept clear at bottom by the running warer, but that the

contrary

contrary was the case where their bottoms were made broad; as the same quantity of water, being thinly spread on the bottom in the latter instance, was not sufficient to carry off the particles of Peat which it contained, but deposited them on the bottom of the drain, which on this account required frequent scouring.

The mode in which Mr. Griffith proposes to construct these drains, so as to obviate as much as possible the tendency of the sides to collapse, deserves particular attention, not merely on account of the simplicity and ingenuity of the principle, but as possessing the recommendation of having answered on the trial, which it has received in the different works undertaken in these Bogs by the Grand Canal Company.

We beg to be understood as by no means pledging ourselves to an opinion, that in all cases such drains, and in the same proportion, would be sufficient to discharge the waters of a great Bog; it is a point on which we wish to reserve the expression of our own opinion, until we shall have had an opportunity of comparing the opinions of our other Engineers. We consider the inquiry referred to us as divisible into two general heads, namely, the practicability of draining the Bogs of Ireland, and secondly, of cultivating them when once drained. In a subsequent Report we shall feel it our duty to enter fully into the latter consideration, hitherto our views have been more directed to the former; since if the drainage should appear to be either impracticable, or attainable only at an expense disproportionate to the object, the latter inquiry would become of little moment; at present we shall merely observe, that we believe there is hardly a part of Ireland in which the evidence of facts does not furnish the most complete refutation of the opinion, "that a drained Bog is not susceptible of the excitement of manure."

On this Mr. Griffith observes to us: "In answer to an assertion made by some persons, that a Bog deprived of water is a Caput Mortuum, on which no plant will vegetate, either spontaneously or by any alteration in the composition of its surface that can be effected; it may be observed, that although Bog when first drained appears to have lost the power of supporting aquatic plants, without a capability of supplying food for the vegetation of plants of a different or more useful nature, still if we have patience till the *Bog Moss, &c. which composes the upper surface of the Bog, shall have subsided, and by the near approach of their mossy fibres (which when alive are kept asunder by water) and exposure to the atmosphere, shall become (to a certain degree) putrid, it will be found that various grasses of good quality, and even white clover, will vegetate spontaneously on its surface."

"But it is not to be supposed that an active people will thus suffer Nature, unassisted, slowly to attain a desirable alteration in the upper surface of draining Bogs; they will naturally join hand in hand with her; and by the simple process of digging or ploughing up the surface of the drained Bog, and by gathering it into heaps and (in dry weather) setting fire to them (having previously mixed a portion of clay amongst the heaps, which is always to be found in inexhaustible quantities beneath the Bog) accomplish in two years, what Nature, unassisted, might have attained (less perfectly) in ten."

A prejudice much more extensive than that of the irreclaimability of a drained Bog, is, an apprehension which we have found very generally entertained, that in the event of the success of these operations, the country would be left without a sufficient supply of fuel. It seems not to be generally understood, that if the Bogs of Ireland could be reclaimed, we should derive not merely the advantage of cultivating their surface, but at the same time, that the power of applying them wherever necessary for fuel, would be increased some hundred or rather some thousand fold. Fuel can at present be obtained only from the edges of these Bogs; the excessive wetness of their interior rendering it in its present state wholly unavailable for fuel, but if once drained, fuel might be procured from every part of them; and it is a great mistake to suppose that the drainage of a Bog would impair its qualities as turf, on the contrary, it would operate as the greatest possible improvement of it, and that not merely at the time when it was effected, but at all future periods, and in a degree progressively increasing.

And we are further convinced, that those who apprehend a scarcity of turf fuel, have formed a most erroneous comparison between any possible demand and the certain power of supplying it. It appears by Mr. Griffith's Report, that the entire proportion of Bog in this district already exhausted by the supply of fuel, amounts to no more than 1,117 English acres, that is, less than one thirty-second part of its whole extent.

And further, if these Bogs ever should be reclaimed, if it should indeed become more desirable to use them for fuel than for cultivation, we may be certain that the profit inseparable from that circumstance, would insure that such would be the application; it may reasonably be supposed that the effect would be, that so small a proportion as might be necessary for fuel, would continue to be applied to that end, and that the remainder would be no less profitably employed for the purpose of agriculture.

It was our wish to have stated the rate of expense per acre at which the survey is conducted under our direction, a point, however, which we find it impossible to ascertain, until we

* "Sphagnum Palustre.—The pulp of the Bog, as has been already observed, is composed of varieties of this Moss.—To exemplify as far as possible the various stages of decomposition which the Moss has undergone between the top and bottom of a deep Bog, I have added at the end of this Report a Section, with a description and analysis of every variation in the colour and composition of the Moss, from the top to the bottom of a Bog of $38\frac{1}{2}$ feet in depth."

—(1.)—
FIRST REPORT
ON THE BOGS
OF IRELAND;
(June 1810.)

we shall have received Reports from our different engineers. Most of the surveys of the districts between Dublin and the Shannon, are already far advanced towards completion; and we expect at the commencement of the next Session, to be enabled to report to your Honourable House, upon the whole of the eastern portion of the great division of Ireland included between the lines mentioned in the first part of our Report, accompanied with a skeleton Map, showing the connexion of these districts. In proportion as they shall be completed, we shall send forward the engineers who have been employed in them to districts more remote, and proceed, as fast as the means which may be intrusted to us will permit, in completing the survey of the remaining Bogs of Ireland.

Dated this 10th day of }
June 1810. }

CH. VALLANCEY, (L. S.)
RICHARD GRIFFITH, (L. S.)
HENRY HAMILTON, (L. S.)
J. LESLIE FOSTER, (L. S.)
WILLIAM GORE, (L. S.)

—(2.)—

SECOND REPORT ON THE BOGS OF IRELAND.

(8 March 1811.)

IN our First Report we submitted to your Honourable House our general view of the extent and nature of the Bogs of Ireland, accompanied by a detailed Report from one of our Engineers, upon a portion of the Bog of Allen, containing 36,430 English acres; we now proceed to lay before your Honourable House the following Reports, which we have since received from our Engineers.

	Containing of Bog Eng ^h Acres.
1st. From Mr. Richard Griffith, junior, on the Western Division * of } District No. I. or the District of the River Barrow - - }	- 41,075
2d. From Mr. Jones, on District No. IV. or the District of the River } Boyne - - - - - }	- 42,370
3d. From Mr. Longfield, on District No. V. or the District of the } River Brusna - - - - - }	- 44,594
4th. From Mr. Townshend on District No. VI. or the District of the } Shannon - - - - - }	- 34,500
5th. From Mr. Edgeworth, on District No. VII. or the District of } the Inny and Lough Ree - - - - - }	- 34,569
Total English acres comprised in this Report - -	197,108
Which, together with the Bogs included in our First Report,	36,430
Make in the whole - - English acres	233,538

In our First Report we were enabled to come to this general conclusion, that about 6-7ths of the Bogs of Ireland are contained within a portion of the Island of little more than one-fourth of its entire superficial extent, included between a line drawn from Wicklow head to Galway, and another drawn from Howth head to Sligo; in its form resembling a broad belt drawn across the centre of the Island, with its narrowest end nearest to the Capital, and gradually extending in breadth as it approaches to the Western Ocean. This great division of the Island extending from east to west, is traversed by the Shannon from north to south, and is thus divided into two parts; of these the division to the westward of the river contains more than double the extent of the Bogs which are to be found in the division to the eastward; our present and our former Report taken together, include all the Bogs which lie in this division to the eastward of the Shannon, except a small detached district of 4 or 5,000 acres in the county of Kildare, which we gave in charge to Mr. Brassington, and whose Report we did not receive in time to include in this statement. These Bogs forming the subject of our First and of our present Report, and including not only the whole of what is usually denominated the Bog of Allen, but also the Bogs in the counties of Longford and Westmeath, may be considered generally as divided into *five* great Districts very distinct from each other. The first, comprising 77,505 English acres of Bog, has its natural falls for the ventage of its waters to the river Barrow.

The greatest height of the surface of the Bogs in this District above the	Feet.
sea at high water mark in Dublin Bay, is - - - - -	315.
Their least height - - - - -	189.
Their greatest depth - - - - -	41.
Their average depth - - - - -	22. to 25.

This District forms the subject of Mr. Richard Griffith, junior's, 1st and 2d Reports.

The

* For his Report on the Eastern Division of this District, see the Appendix to the First Report of the Commissioners.

The next of these Districts (No. IV. reported on by Mr. Jones) may properly be denominated the District of the Boyne, as almost all the waters of its Bogs are discharged into the sea through that river.

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

The greatest height of the surface of the Bogs in this District above the	Feet.
sea at high water mark in Dublin Bay, is	336.
The least height (as we collect from Mr. Jones's table)	218.
Their greatest depth	40.
Their average depth	22. to 25.

The third and fourth of these Districts are separated from those already mentioned by a high and broad tract of comparatively dry country, which stretches north and south of Tullamore; these two Districts have their natural falls to the river Shannon, and are divided from each other by the river Brusna; of these the District to the northward of the Brusna contains 34,500 English acres of Bog, and forms the subject of the Report of Mr. Townshend.

The District to the southward of the Brusna contains 44,594 English acres, and is reported on by Mr. Longfield.—Of the Bogs in Mr. Townshend's District,

The greatest height of the surface above the sea at high water mark in	Feet.
Dublin Bay, is	274.
Their least height	114.
Their greatest depth	44.
Their average depth	30.

And in Mr. Longfield's District,

Their greatest height above the sea	310.
Their least height	111.
Their greatest depth	45.
Their average depth	22. to 25.

The fifth of these Districts, reported on by Mr. Edgeworth, contains two tracts of Bog, amounting in the whole to 34,611 English acres. Of these the first lies on the banks of the river Shannon, and depends on it for its drainage; the latter discharges its waters into the river Inny, which also flows into the Shannon. The Bogs in this District are deeper than any others we have observed.

The greatest height of their surface above the sea at high water mark in	Feet.	In.
Dublin Bay, being	253.	8.
Their least height	176.	8.
Their greatest depth	47.	0.
Their average depth	30. to 35.	

Thus it appears that these Bogs (presenting in every instance sufficient falls for their drainage) discharge their waters into the sea, in widely different directions; those from Mr. Richard Griffiths, junior, and Mr. Jones's districts, flowing into the Irish Channel; the former by the Barrow at Waterford, the latter by the Boyne at Drogheda: while the waters of the Bogs in Mr. Longfield's, Mr. Townshend's, and Mr. Edgeworth's Districts, are ultimately carried by the Shannon into the Atlantic Ocean.

We propose to accompany our next Report with an Index Map, exhibiting the connection of these and other Districts.

In comparing the Reports of our Engineers with each other, we find, as might be expected, considerable difference of opinion as to the most eligible modes both of draining these Bogs, and of reducing them to a state of cultivation. They all however agree, not merely as to the perfect practicability in every instance of reclaiming them, but also that the measure would be attended with a very great degree of profit; and we are far from being disposed to believe, when they propose different means for arriving at the same end, that one only can be right.

We shall now endeavour to present the result of their opinions to your Honourable House, and for greater clearness, shall class them under the different heads:

- | | |
|---------------------|--------------------------------|
| 1st. Of Drainage. | 3d. Of Planting. |
| 2d. Of Agriculture. | 4th. Of Estimates and Expense. |

On the Drainage of Bogs.

In the several Districts which have been reported on, the Bogs are intersected by streams, the channels of which are generally in the under strata, usually consisting of gravel or clay, and thus suited to become the principal outlets for the waters taken off the interior of the Bogs; and on the surfaces of the Bogs there appear to be abundant falls towards these streams, to carry into them the surface water, by the means of such drains as the Engineer may judge to be expedient.

It will not be necessary to deepen or alter the course of any great River for the purpose of carrying off the water drained from these extensive tracts; some alterations, however, are proposed

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

proposed by the Engineers, to be effected in the lesser streams, the expense of which will be covered by the improvement of the adjacent flooded lands. We state this, because it has been erroneously conceived, that if any considerable proportion of the Bogs of Ireland were to be drained, it would be necessary to execute expensive works in deepening or altering the channels of some of the principal Rivers.

We feel it necessary to enter into some detail on the different modes of Drainage which have been proposed to us, on account of the differences of opinion which we have already stated to exist among our Engineers; and also, because it is a general topic of inquiry, whether deep or surface drainage is best adapted to the reclamation of Bog; on which some have even gone so far as to doubt the practicability of draining Bog at all, without sinking to the under strata.

This is a point of great importance, because it must be evident that to sink drains to the bottom of Bogs, so deep as those reported on, would occasion such an expense as the subsequent improvement of the land would hardly cover; and the expediency of the project of draining the Bogs of Ireland, if it rested on this point, might be doubtful.

But we have the most satisfactory proof, in the Reports of our Engineers, that such deep drainage is not necessary, and that the surface of a Bog may be highly improved, so as to bear crops, without drawing off the water from the lower strata.

Mr. Longfield states, that the vegetable matter of which the Bogs in his District are composed, is *perfectly* retentive of water, so much so, that the numerous duck-pools and lodgments of water in Bogs are almost all upon different levels; and that in the 10th division of his District, there exist two considerable bodies of water at the distance of a few perches only from each other, and yet differing two feet and an half in the levels of their surfaces.

Mr. Edgeworth remarks, that in Bogs No. 1. and 9. in his district, some drains, six or seven feet wide and as many deep, had been made from the centre of the Bog to its outlet; these were about 20 perches asunder, and although they had been finished for 20 years and were not choaked up, the Bog between them did not appear to have been affected by them. He also states, that deep drains do not carry off the water from any considerable extent of the adjoining surface.

On this part of the inquiry, Mr. Richard Griffith junior's observations appear to us to be worthy of great attention. "The practicability of draining very wet Bogs, he says, has been doubted by many sensible men, from the fact (which is undeniable) that 10 or 15 yards towards the interior, from the face of a turf bank, the surface of the Bog is frequently found extremely wet, and therefore (it is said) if the surface of a Bog near the edge of a turf bank (from whence there is always a fall of at least 10 or 12 feet) be not drained, it cannot be expected that any system of drains will ever accomplish that end." But in answer to this he observes, "That the surface of all Bogs near the edges is much lower than the interior, where the springs are usually situated which chiefly supply the water contained in the Bog; the water from these sources naturally flows towards the exterior, which is on a lower level. How can it be expected that turf banks formed at the edges of Bogs so situated, will prevent the flow of the water from the interior? Owing to the side cuts usually made, will they not have a tendency to draw more water to those points than would have naturally flowed there? But if the drains proposed in his Report (he observes) were cut in any Bog, the water from the interior would be *arrested in its progress towards the edge*, and quickly discharged by the minor and cross drains. The natural consequence of the adoption of such a system, in his opinion, must be nearly perfect superficial consolidation."

In these observations, Mr. Richard Griffith junior appears to us to have well answered the objection, as far as it rests on the observed effects of turf banks; and with respect to the other difficulties, we may remark, that lakes in Bogs, such as Mr. Longfield notices, are situated in hollows; that the Bog stuff forming their banks is always, with respect to the rest, in a state of comparative solidity, whether rendered so by distinct causes previous to the formation of the pools (which seems very probable) or by the decomposing effects of a body of water gradually reducing it to puddle, in which state it is afterwards dried and hardened in summer. The drains mentioned by Mr. Edgeworth, were probably insufficient in size or number to carry off the water of the Bog, which was retained in every part of it by the capillary attraction of its fibrous texture.

Mr. Townshend's observations throw further light upon the subject; he informs us, that strata of turf of a firm and close texture, impervious to water, exist in every Bog; and he is decidedly of opinion, that the springs under the Bog do not penetrate upwards through this substance, but that the wetness of the Bog is caused by the rain water falling on the surface and lodging in the small cracks and fissures, and in the spongy texture of the surface moss and other vegetation, which varies in depth according to its nature and quality; these strata retain the rain-water until it is exhaled by the atmosphere, or is slowly drained by the natural descent of the surface.

But we do not feel it necessary to adduce many arguments or further observations on this question, as we have the evidence of some thousands of acres of Bog in different parts of these districts, which have been thoroughly drained and profitably improved; a circumstance that would never have taken place, if the very nature of the substance, and not more probably some local cause, opposed such difficulty to the undertaking.

We

We shall now give an abstract of the system of Drainage recommended by our several Engineers, so as to bring together, at one view, the information we have obtained, as far as the limits of a Report will admit.

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

Mr. Longfield, arguing upon the retentive nature of Bog, considers that the efficacy of drains is not proportioned to their depth beyond a certain extent; his system is therefore one of main, minor, and cross drains of moderate dimensions; which he recommends on consideration as well of the nature of the undrained Bogs in his district, as of the mode of drainage adopted in parts already reclaimed. The main drains he proposes to be from 10 to 15 feet in depth, the surface drains to be 4 feet in depth and 4 feet in breadth, with perpendicular sides. This form of drain Mr. Longfield is induced to recommend, from his having found that such drains stand remarkably well, even where they have been 7 feet deep and 4 feet wide (as may be seen now in the *Red Bog of Lettybrook*) and are easily passed over, and not liable to be choaked by accidental crumbling of the banks. To the objection, that the sides of perpendicular drains in soft Bogs would collapse or close together, he answers, that experience proves the contrary; that perpendicular sides do not retain or catch the waters falling on the surface, but harden, and become in fact "a Bog wall," supported and kept together by its unbroken fibres from top to bottom; whereas the sides of sloped drains being exposed to the weather, are kept nearly in their original state of wetness. This form, however, Mr. Longford does not recommend for the principal or main drains, the talus or slope of which he does not particularize.

In laying out his drains, Mr. Longfield has always kept in view the employing them as small Canals, for the conveyance of gravel or manure through the Bogs; and as his district affords great facilities towards this important object, he has been enabled to accomplish it in many instances, his main drains being frequently carried from the foot of a gravel hill or mound of clay, through the adjoining tracts of Bog. He has also made provision for carrying into effect a system of irrigation, the efficacy of which he considers to be great in the reclamation of Bog.

Mr. Longfield's district appears to afford more instances of the improvement of Bog, than the others now under consideration; one instance we select as a practical example of the efficacy of a judicious system of drainage; it is related in the Report on the 12th division of the Bogs in his district.

Mr. Molloy, of Clonbealymore, he states, has most judiciously effected the drainage of about 170 acres of Red Bog, besides bringing into a profitable state a great portion of moor and bottoms round the Island of Clooneen. The quantity of drains which he found necessary is marked on the Map, affording a good specimen of the number that may be required for the drainage of the whole; but, however, we are to consider, that his surface drains were unassisted by any main tap, and therefore the Bog required more of them than will be found requisite when they are intersected by the great main drains proposed. Mr. Molloy's drains are not large, but numerous, being in general from 3 to 5 feet deep; and the effect of them is such, that the heaviest beast may pass over his Bog in summer-time.

Mr. Edgeworth does not approve of a general system of deep drainage; partly because he considers deep drains to be little more effectual than shallow, and partly because he disapproves of employing them as canals for conveying manures, being of opinion that the loading and unloading the boats, which must be done by wheel-barrows, would be too expensive. In lieu of canals, he has proposed wooden Railways, with carriages adapted to them, on a most ingenious plan of his own invention, as detailed in the Appendix to his Report. He therefore has not given levels for carrying such canals or deep drains through the Bogs of his district (*to which he expressly confines his opinions,*) but recommends, in preference, surface drains of smaller dimensions; the larger to be 5 feet deep and 3 feet wide, the smaller to be of 18 inches in depth, and of a breadth varying according to the wetness of the Bog. He also recommends, that the sides of the drains should be perpendicular, remarking, that in turf banks the sides which are perpendicular do not give way; the bottom or sole of the drain, he proposes to form in the shape of an inverted arch, so as to resist the lateral and upward pressure of the mass of Bog, and to form a narrow channel for the water, whereby its current will be accelerated, and will keep the drain free.

In detailing the account of an improvement effected by him in a Bog of 27 acres, Mr. Edgeworth remarks, that only a few slight surface drains of small dimensions were made, which sufficiently drained this Bog; but he also observes, that the Bog was inclosed with a seven-foot ditch, in part sunk to the under stratum of clay; and further, that the Bog having been in part cut out, its depth did not exceed four or five feet: this improvement therefore does not afford proof, that a similar system of drainage would be effectual in Bogs of so great a depth as 30 or 40 feet.

Mr. Edgeworth has recorded a remarkable occurrence, which is in favour of a system of deep drainage, wherever it can be effected without incurring too heavy an expense. The Bog of Rine, situated on the banks of the River Camlin, in the county of Longford, of an average depth of 35 feet, and having a considerable inclination towards the river, suddenly burst on the night of the 16th December 1809; great part of the soft stuff of which it was internally composed, slipped towards the river and into its channel, without carrying away the surface of the Bog, which however sunk considerably; the internal water of the Bog was let off, and about 20 acres of the surface, which had been so wet as to be scarcely

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

passable, became completely drained in the course of a fortnight. The details of this singular fact are interesting in many points of view; and it shows, that where an exit is given for the waters of a Bog, at a considerable depth beneath the surface, the effect in draining the Bog is very rapid and considerable; probably from the pressure of the incumbent strata accelerating the issue of the waters.

Mr. Edgeworth has invented a plough (which he calls a Seton-plough) adapted to surface draining; it is described in the Appendix to his Report, and appears well worthy of attention: it has not yet been sufficiently tried to enable us to pronounce on its merits; experience will demonstrate how far it is applicable to the drainage of Bogs.

Mr. Richard Griffith junior, in his former Report, had recommended a system of drainage which should divide the Bogs into fields of ten Irish acres; he has since re-considered this part of the subject, and thinking that such divisions would be too large for convenience, and also that in certain situations the centre of the field might remain too wet for agricultural purposes, he now proposes that, in addition to the three classes of drains proposed in his former Report, a fourth class, which he calls *Surface Drains*, should be executed; and he places them at such distances, as, with the larger classes of drains, will divide the Bog into portions of $3\frac{1}{2}$ Irish acres.

His revised system of drainage, therefore, is as follows:

1st. Main drains in the lowest situations, their dimensions, 14 feet top, 2 feet bottom, and 12 feet in depth. 2d. Minor drains, falling into the main drains obliquely, and in such direction as will give the greatest fall to the water; their dimensions 9 feet top, 1 foot bottom, and 8 feet in depth; these minor drains to be sunk at the distance of a quarter of an Irish mile from each other. 3d. Intermediate between the minor drains, and parallel to them, Mr. Griffith proposes to cut drains of still smaller dimensions, viz. 6 feet top, 1 foot bottom, and 5 feet deep; and further at right angles to the minor and intermediate drains, a system of cross drains of dimensions similar to those of the intermediate drains, is proposed to be carried 280 yards asunder, which would divide the Bog into square fields of 10 Irish acres. Lastly, he proposes surface drains, of 4 feet breadth at top, 1 foot bottom, and 3 feet depth, intended to divide the 10 acre fields into three parts, by two drains to be cut parallel to the minor and intermediate drains, that is, in the direction of the fall. The whole of the foregoing drains would divide the Bog into rectangular patches of 280 yards long by $93\frac{1}{3}$ broad; and Mr. Griffith considers this general system of drains quite sufficient for that high and porous species of Bog which abounds in his district, and which in his description of the several species of Bog, he denominates "Fibrous or Red Bog."

To explain this system more clearly than by any general description, Mr. Richard Griffith junior has annexed to his Report an *enlarged* Map of Geashill Bog, exhibiting the main, minor, intermediate, cross and surface drains, all laid down in their proper situations.

Mr. Richard Griffith junior enters at large into the question of the proper form for drains, observing previously, that he has been induced to recommend the plan already detailed, from observing that similar drains made by the Grand Canal Company in the Bogs of his district, have answered perfectly well. The chief desideratum he states, in cutting Bog drains, is to form them in such a manner that they shall keep themselves clean, and that their sides shall have no tendency to fall in or collapse. The first of these objects he thinks may be obtained by making the bottom of the drains sufficiently narrow, that is, proportioned to the quantity of water which is likely to pass through them, and the sides may be prevented from falling in by giving them a sufficient slope; that which he has recommended is 6 inches increase of width on either side for every foot in height; thus the proposed dimensions of minor drains are 9 feet top, 1 foot bottom, and 8 feet deep. He observes, that the Bog drains which he has seen made with perpendicular sides, are always in firm Bog, and that in his opinion, it is utterly impracticable to form such drains in very wet Bog. Drains of this description have always a tendency to choak, as they must necessarily be made 3 feet broad at bottom (if the drain be 4 or 5 feet deep) to allow the workmen room to throw out the Bog stuff; their sides must also be expected to fall in, unless the Bog be very compact; even turf banks, which are always made in the driest and most compact parts of the Bog, he observes, frequently fall in in winter, and almost universally crack behind and hang over. In fact, every kind of Bog drain will in time become narrower at top than when originally formed; the drains made by the Canal Company, as before mentioned, were cut with a slope equal to what he recommends, and have now become considerably narrower at the top; had they been made originally with perpendicular sides, they must, he observes, have long since fallen in. He is induced further to recommend drains narrow at bottom from a consideration of economy, as they contain fewer cubic yards in a running perch of work, and the principal part of the excavation is at the surface where no pitching is required.

Mr. Townshend's plan of Drainage is formed on somewhat different principles; he has kept in view the formation of Canals, not only for the conveyance of manure towards the reclamation of the Bogs, but for permanent navigable communications between the Bogs and the great rivers adjacent. He has also formed his system of Drainage upon the idea, that it is necessary to retain the lower strata of Bog in a state of moisture, after the surface shall have been freed from water.

In determining on the levels best suited to these Bogs, Mr. Townshend has therefore calculated on retaining the surface of the water in the proposed drains at least on an average

two or three feet below the surface of the Bog in summer, when there is 5 feet depth of water in the drains, and he proposes to make sluices and overfalls in every level or reach, in convenient places, where there is a natural fall towards the Shannon or any other river, for discharging the surplus water in times of heavy rains, and also for drawing off the water in the navigable drains, so as to reduce the depth to 3 feet only in the winter season; the surface of the Bog will then be 4 or 5 feet above the level of the water in the drains, and the depth of water, he states, will still be sufficient for the boats. This difference of level between the surface of the Bog and the surface of the water, Mr. Townshend thinks, will be fully sufficient to answer the purpose of agricultural improvements, and the proposed regulations of winter and summer levels will prevent the inconvenience of a want of water in dry seasons for the purpose of promoting vegetation, for the use of cattle and for irrigation, where that is practicable. Should the Bog subside too near the level of the water, the drains may be re-sunk; and Mr. Townshend prefers this to the sinking deep drains at once, they being more liable to collapse; he however does not think that the surface of the Bog will subside considerably, so long as the water is kept in the drains.

Mr. Townshend has laid out his main drains principally with a view, as it should appear, to their being used as Canals, and therefore has calculated on dimensions of 29 feet breadth at the water surface, 14 feet breadth at the bottom, and 5 feet depth of water. The collateral or minor drains he proposes to be 22 feet in breadth at top, 7 feet at bottom, and of a depth to give 5 feet water; these latter he thinks will be adequate to the purpose of Canals for carrying out manure, and for local communication: he recommends them in preference to the larger Canals, as sufficient for the present, and we are disposed to consider that drains even on a smaller scale will answer the purpose. The spaces on each side of the main drains and collateral cuts, he thinks, can very easily be drained by common drains, 6 feet wide at top, and 4 feet deep, at an expense not exceeding that of making proper fences for inclosing and dividing the Bog into convenient fields; the cuts are so laid out, that the intervening space seldom exceeds 80 perches Irish, or 560 yards in breadth.

We apprehend that Mr. Townshend has carried our instructions, in respect to the eventual conversion of main drains into navigable Canals, somewhat beyond our intention in the first instance. It would appear from his Report, as if the principal object of research were the intersection of the Bog in all directions with navigable cuts, and that the drainage of these wastes were only a secondary consideration; under this impression, we conceive that he retains the water in his navigable cuts, much too near the surface of the Bog to admit of complete drainage, and that he has laid them out, in the first instance, upon a scale far beyond what would be necessary to effect that prime object, and has thereby materially augmented their expense; to which must be superadded the necessary accompaniments of inland navigation, viz. Locks, Sluices, Aqueducts, inclined Planes, Embankments, &c. &c. to a very considerable amount. Whenever the Bogs shall have been perfectly drained, it will doubtless be a matter well worthy the consideration of the proprietors to obtain navigable communications with the main land, for the purpose of procuring gravel, lime, &c. and for the more easy and cheap conveyance to market of the produce of the Bogs; but as we conceive that this is only a matter for future consideration, no further attention ought now to be paid to it, than may be sufficient to cause the main drains to be laid out in such directions as may not be inconsistent with the future attainment of so desirable an object.

The system of drainage which he proposes will, he thinks, answer for all descriptions of Bog; whether deep or shallow, the depth of the Bog or Peat he considers to be of no consequence in determining the position of the drains, which are to suit the level of the surface; nor does he conceive it at all necessary to sink them to the full depth of the Bog, with an intention of draining or tapping the water from it, because (excepting a few feet near the surface) the great mass of Bog or Peat he considers to be a substance impervious to water. This observation, however, appears in the subsequent part of this paragraph to be applied principally to black Peat or Turf, which is far more firm and close in its texture than fibrous or red Bog.

That description of Moss which retains most rain water, he says, has the quickest growth, hence we often find the softest parts of the Bogs in the most elevated places, and in many instances, even higher than the surrounding lands; and on the contrary, hard firm Bog on the lowest levels; which Mr. Townshend thinks is a convincing proof, that springs or rivers are not a principal cause of the fluidity of Bogs, but rather that they do not ascend into it at all. He states, in further corroboration of this opinion, that considerable tracts of Bog have their base much above the level of the natural outlets, and so that it is probable that any springs which may be underneath the Peat penetrate through the sand or porous strata, or the interstices of rock, into the adjacent rivers. The inference which Mr. Townshend draws from these premises is, that small drains, with levelling and trimming the surface will effect the purposes of drainage completely; and that the immense saving of expense, time and risk in execution, together with the conveniences and advantage they will afford, will make them preferable beyond comparison to the deep ones.

Mr. Jones also agrees in the extreme tenacity of the matter of which Bogs are composed, which causes the rain water to be retained on their surfaces, thereby chilling vegetation; he nevertheless considers that these Bogs can be easily drained, the outlets of waters being considerably lower than the surface. His main drains are laid out according to circumstances (at about 80 perches asunder) and the transverse drains crossing the main drains generally at right angles to them, are also laid out at the distance of 80 perches from each other; the principal

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

principal consideration has been, to point them in such directions as to give the waters the greatest fall from the summit of the Bogs to their outlets or natural discharging points.

The main drains through the deep and wet Bogs, Mr. Jones proposes to be sunk from 14 to 16 feet in depth from the present surface, and to be 2 feet wide at bottom. The transverse drains to be sunk from 10 to 12 feet, and to be also 2 feet wide at bottom; to these he adds intermediate drains, midway between both the main and transverse drains, to be sunk 5 feet in depth. Wet Bogs, he observes, will not admit of drains of the above description, being sunk at once to their full depth, as the sides would have a tendency to close together, and the bottom to rise and swell up; time therefore must necessarily be given for the sinking. Mr. Jones has detailed in his Report a very simple mode of sinking drains of large dimensions, by working at intervals, and allowing the Bog time to subside. The Plate annexed to his Report explains this method clearly, and it seems applicable, with most advantage, to very wet Bogs, in which it will save the excavation of 58 cubic yards of Bog in every running perch of 21 feet; and by this manner of operation, he thinks the danger of collapsing will be avoided. He further recommends that frequent borings should be made in the drains with an auger of 3 or 4 inches diameter, to give vent to the springs, the beneficial effect of which he has frequently observed.

Mr. Jones conceives, that to form navigable Canals in the first instance through the Bogs, would interfere with their effectual drainage, and proposes therefore, that the main drains should not be formed into Canals until the drainage shall have been completed; at which period he thinks this plan will be advantageous: this observation we consider to be judicious, and are of opinion, that Mr. Jones's suggestion ought to be observed.

In draining a large tract of Bog, it is necessary to be cautious, lest the operation be carried too far; for it appears, that to render the surface of a Bog perfectly dry, would be prejudicial; there are limits beyond which its drainage must not be effected. Red Bog, as Mr. Richard Griffith junior observes, when first drained, is extremely porous and open in its texture, on which account it is liable to become so dry in summer, that the natural grasses die for want of moisture; but in process of time, the surface of drained red Bog, by exposure to the atmosphere is decomposed, becomes compact, and capable of supplying food and moisture to plants in dry weather.

Mr. Longfield is equally aware of this, and relates facts which prove that vegetation is completely checked on the Bogs by drought; he has therefore contrived his drains so, that when the Bog shall be reduced to a state of cultivation, they can be dammed up, and the water generally diffused over the surface, for the purpose of irrigation.

Mr. Townshend seems more apprehensive than any of our other Engineers, of the prejudicial effect of extreme drainage, so far, that besides his plan for retaining the water in his drains within a few feet of the surface, he proposes to take in several streams from the adjoining lands, in addition to the soakage from the Bogs, to ensure a sufficient supply of water in all seasons.

It is obvious, that if a general drainage of the Bogs in any District should be carried into effect, the neighbouring streams and brooks, into which the waters of the Bog will then be suddenly discharged, will be subject to frequent and violent floods; provision must be made to obviate this, by deepening the beds, and removing the obstructions in the channel of these small rivers, sufficiently to render them capable of effecting the quick discharge of the waters, without flooding the country, as otherwise, the injury that might be produced by the floods in the low lands would counterbalance the advantage of drainage in the Bogs. Our Engineers, where such operations appeared necessary, have given Plans for effecting them, with the proper Sections; and the expense is included in their respective Estimates.

They have also taken into consideration and described the proper sites for such Mills as may be necessary, and such alterations in the existing Mills and Weirs as may be required towards the draining of the adjacent Bogs.

It must be expected, that with whatever skill and attention the drains be executed, they will in many instances be exposed to accidents, and for the first few years at least, will suffer from the extreme wetness and want of compactness of the soil, by collapsing at the sides, and by the effect of surface rills of water, and of the heavy rains in winter time. It will therefore be necessary, after the drains shall have been executed, to pay attention to them for a certain time, that they may be kept open, and their channels afford a free course for the waters.

Mr. Richard Griffith junior recommends, that after the drains shall have been completed, the Bog should be suffered to remain for 18 months or perhaps two years, to subside; during which time, labourers should be employed under the direction of a competent overseer, to remove obstructions, and to keep the drains in perfect repair; and he has included in his Estimate the expense of this operation.

We are fully aware, and our Engineers seem equally impressed with the opinion, that it is impossible to lay down any general system of drains which could be accurately followed in every instance; local circumstances must always be attended to; the different degrees of the wetness of Bogs, the varieties in their texture affecting the degree of tenacity with which they retain water, the form of the surface giving different falls for the drains, and many other particulars must be taken into consideration; and every plan, however perfect in general, must arrange itself according to them. We therefore consider, that the differences in the Reports of our Engineers on this head, and the variety of opinions as above stated, so far from

from being a subject for doubt or objection, in fact render their Reports more valuable; what is suggested by one may apply better to a particular case than the plan of another; and the very discussion to which their differences of opinion will probably lead, we think will finally prove of advantage. Upon these principles therefore, we are of opinion, that neither deep nor shallow drainage is to be exclusively preferred, but that wherever extensive Bogs are to be drained, main and minor drains will be required for the purpose, to act as receiving drains for the water, which a system of numerous small surface drains must collect in considerable quantities; and we are inclined to consider that a plan of drainage embracing a system of main, minor, and surface drains, will be found most universally applicable.

We also conceive, that it may hereafter in many instances be desirable to combine with the drainage of the Bogs, a system of internal navigation, on a very reduced scale, for the conveyance of gravel and other manures to the Bogs; and we look upon Mr. Edgeworth's invention of wooden Railways and Carriages, and Mr. Townshend's plan for using light Waggons on floats, as valuable auxiliaries towards this important step in the progress of the reclamation and further improvement of Bog.

Agricultural Reclamation of Drained Bog.

ON this important part of the subject some of our Engineers have furnished us with much detailed and highly valuable information. Mr. Professor Davy has also been so obliging as to give us the general outline of his opinion on the subject: his Answer to a letter from our Secretary is subjoined as the 10th Article of our Appendix.

Mr. Richard Griffith junior has suggested to us different processes by which the drained Bog may be brought into a state of Reclamation applicable to several purposes, and yielding various degrees of profit, corresponding to the different rates of expense proposed to be incurred, accompanied by very detailed Estimates of the expense, and of the profit that may be expected, founded upon the result of numerous inquiries as to the modes which have been pursued, and the costs of the various improvements already effected. These Observations and Estimates appear to us to be well worthy of attention. He begins, as has been already observed, by recommending, that after the several drains shall have been completed, the Bog should be suffered to remain for eighteen months or perhaps two years to subside, during which time it will be necessary to employ a sufficient number of labourers under the direction of a competent overseer, to remove obstructions and to keep the drains in perfect repair, and in estimating the drains he has increased the price per cubic yard in order to cover this expense. The next step which he recommends, is, to form roads along the edges of the drains, sufficiently strong to bear the weight of small carts; the superior advantage in this process to be derived from Mr. Edgeworth's plan of wooden moveable Railways, is, we think, very considerable. Mr. Richard Griffith junior next considers the quantity of manuring gravel which would be sufficient to cover an acre of Bog, in order to render it capable of producing a good crop of Rape, Potatoes or Oats, or rather a succession of those three crops, without any further addition of manure than the ashes that would be produced by a light or a partial burning of the surface; he supposes that six loads to the perch of gravel (each load containing about seven hundred weight) would be amply sufficient to cover each acre, together with a slight top dressing of ashes, or (if more convenient) of quick lime, say one thousand loads, or three hundred and fifty tons of gravel to the acre, he calculates that upon a general average, each load could be laid on the Bog at an expense of about four-pence per load, or £. 16. 13. 4. per Irish acre, and the top dressing of caustic lime would cost about £. 6 per acre more, to which add the expense of planting and digging out an acre of potatoes, which he recommends as the first crop, £. 10. He proposes a second crop of potatoes to follow the first, in which case the produce of the second year, he observes, will be found greatly superior to that of the first. The third year a crop of oats, and to lay down the land with hay-seed. For the fourth year meadow, without any additional expense. Mr. Richard Griffith junior adds, that if he is not greatly mistaken, the Bog so treated would be completely reclaimed, and would in its then state, be well worth £. 1. 10. per acre per annum.

There is however another rotation of crops, which he says he would prefer to the foregoing, and which is also frequently practised, with the exception however, that the large quantity of clay and gravel which he recommends, is seldom or ever afforded to the Bog in the first instance, and on which increased quantity he builds his expectation of perfect reclamation, by forming a solid upper stratum on the Bog, without which the plough can only operate at particular seasons; for this purpose he proposes, that after the one thousand loads of gravel, as above stated, shall have been laid out and spread, the whole should be lightly ploughed, and after a slight top dressing of lime or of red ashes, which latter may be easily produced by burning the surface of the nearest black Bog, a crop of rape should be sown, to be succeeded with one crop of drill potatoes, oats and meadow, and as soon as the hay shall be mowed, about two hundred and fifty loads of gravel or clay per acre should be laid out and spread upon the surface; this process, he adds, would leave the land (for such it might be then called) in a state of great power and vigour, and infinitely more profitable to the farmer for tillage, meadow or pasture, than most of the uplands in the neighbourhood. He is of opinion, that after the above process, including the second top dressing of gravel, the value of the Bog to the farmer would far exceed (although he states it at no more than) £. 1. 10. per Irish acre.

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

He next lays before us a Prospectus of the probable Expense of the two modes of cultivation above suggested, together with the annual Return to be expected from the several crops in the process of four years cultivation; and for the purpose of perspicuity, he makes his estimates upon a single average acre, and afterwards forms his conclusion upon the result of four hundred acres under similar treatment.

First proposed rotation of Crops.

1st year - - - Potatoes.
2d d° - - - D°.
3d d° - - - Oats laid down with Hay-seed and white Clover.
4th d° - - - Meadow.

Second proposed rotation of Crops.

1st year - - - Rape.
2d d° - - - Potatoes in drills.
3d d° - - - Oats laid down with Hay-seed and white Clover.
4th d° - - - Meadow; immediately to be followed by a slight covering of gravel.

D^r and C^r on first proposed rotation of Crops.

D ^r , or OUTLAY.	£. s. d.	£. s. d.
First year.		
Putting out 1,000 loads (7 cwt. each load) of gravel per acre, at 4d. per load - - - - -	16 13 4	
Spreading the gravel - - - - -	0 10 —	
Top dressing of lime - - - - -	6 — —	
Seed, eight barrels, at 5s. per barrel - - - - -	2 — —	
Planting, second covering, digging out and gathering - - - - -	8 — —	
per acre - - - - -	33 3 4	
Add Interest, for nine months on £. 33. 3s. 4d. at 6 per cent. per annum - - - - -	1 9 10	
		34 13 2
Second year.		
Seed-planting, second covering, digging, and gathering, per acre - - - - -	- - -	10 — —
Third year.		
Two ploughings and harrowings - - - - -	2 — —	
Harrowing with grass harrows, and rolling after the sowing of the hay-seed - - - - -	— 15 —	
Seed Oats, 1½ barrel per acre, at 15s. per barrel - - -	1 2 6	
Hay seed and white Clover:		
12 barrels of white Hay seed - - - - - £. 1 16 0		
12 lb. of red, and 4 lb. of white Clover - - - - - 1 2 9		
	2 18 9	
Fourth year.		
Meadow - - - no expense.		6 16 3
Total Expense of 4 years cultivation, per acre - - -		51 9 5

C^r, or RETURN.

First year.		
60 barrels of Potatoes, at 5s. per barrel - - - - -	15 — —	
Second year.		
80 - - - D° - - - at 5s. per barrel - - - - -	20 — —	
Third year.		
14 barrels of Oats, at 14s. per barrel - - - - -	9 16 —	
Besides Straw, which pays for reaping, threshing, &c. &c. &c.		
Fourth year.		
Meadow; the price at which it would set per acre - - -	5 — —	
Total Return from four years cultivation, per acre - - -	£.	49 16 —
Total Loss on four years cultivation of Bog, per acre - - -	- - -	1 13 5
	£.	51 9 5
After which the ground will set for at least £. 1. 10. per acre per annum.		

D^r and C^r on second rotation of Crops.D^r, or OUTLAY.

First Year.						£.	s.	d.	£.	s.	d.
Putting out 1,000 loads (7 cwt. each load) of gravel, per acre, at 4d. per load -	-	-	-	-	-	16	13	4			
Spreading D ^o -	-	-	-	-	-	—	10	—			
Lime or red ashes -	-	-	-	-	-	5	—	—			
Spreading the lime or ashes -	-	-	-	-	-	—	5	—			
One ploughing -	-	-	-	-	-	—	18	—			
Rape seed and sowing -	-	-	-	-	-	—	5	—			
Add, Interest on the above Outlay for 18 months, at 6 per cent. per annum -	-	-	-	-	-	2	2	5			
Second year.									25	13	9
Potatoes in drills -	-	-	-	-	-	—	—	—			
Two ploughings and harrowings at and before sowing -	-	-	-	-	-	2	—	—			
Drilling; dropping the sets, and covering the seeds -	-	-	-	-	-	2	—	—			
Seed; six barrels to the acre, at 5s. per barrel -	-	-	-	-	-	1	10	—			
Hoeing with the plough, and landing -	-	-	-	-	-	1	—	—			
Ploughing out and picking -	-	-	-	-	-	1	—	—			
Expense per acre -	-	-	-	-	-	—	—	£.	7	10	—
Third year.											
Oats; the ground to be laid down with Hay seed and Clover, as in the first mode in the third year.											
Expense per acre -	-	-	-	-	-	—	—	—	6	16	3
Meadow; after the Meadow is cut, I should recommend about 250 loads of gravel per acre to be spread on the grass, to make up for the gravel consumed in the first turning -	-	-	-	-	-	4	3	4			
Spreading and picking -	-	-	-	-	-	—	10	—			
Expense per acre -	-	-	-	-	-	—	—	£.	4	13	4
Total Expense of 4 years cultivation and improvement, per acre }						£.			44	13	4

C^r, or RETURN.

Produce of First year.											
12 barrels of Rape seed, at 34s. per barrel, per acre -	-	-	-	-	-	£.	20	8	0		
Deduct reaping and thrashing -	-	-	-	-	-	1	10	0			
Second year.									18	18	—
80 barrels of Potatoes, at 5s. per barrel -	-	-	-	-	-				20	—	—
Third year.											
14 barrels of Oats, at 14s. per barrel -	-	-	-	-	-				9	16	—
Fourth year.											
Meadow; the price of which it would let -	-	-	-	-	-				5	—	—
Total Return from 4 years cultivation -	-	-	-	-	-				53	14	—
Deduct Total gain for 4 years cultivation of Bog, per acre -	-	-	-	-	-				9	—	8
						£.			44	13	4

From the foregoing prospectus it would appear, that upon the second rotation of crops (which Mr. Richard Griffith junior considers to be the best for the ground) there would be a clear profit of £.9. 0. 8. per acre on the general result of four years cultivation and improvement, being nearly equal to two guineas per acre per annum; Mr. Richard Griffith junior adds, that fearful lest he should have drawn too flattering a picture of the undertaking, he has gone over every article in the foregoing Estimates, both of expense and produce, with some very experienced and discerning farmers, and has not been able, after a thorough investigation to correct them in any respect; as however it may be apprehended, that in farming upon a large scale, the expense may be increased beyond the best considered

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

considered estimate formed upon a small one, he therefore has thought it expedient to increase the amount of the Outlay, by an addition of 10 per cent. to the estimate, and to subtract 10 per cent. from the produce of the crops, as an allowance for partial failures arising from inclement seasons. And he says he feels satisfied that by so large an allowance (making on the whole concern a deduction of profit amounting to 20 per cent.) he has made ample provision for every possible contingency.

According to this Statement, the Account will stand thus:

To amount of Outlay on second rotation of Crops, as per prospectus, per acre	-	-	-	-	-	-	-	-	-	£.	s.	d.
Add 10 per cent.	-	-	-	-	-	-	-	-	-		4	9 4
Total Amount of Outlay										£.	49	2 8
To amount of Return per acre, as per prospectus	-	-	-	-	-	-	-	-	-		53	14 —
Deduct 10 per cent.	-	-	-	-	-	-	-	-	-		5	7 5
Total Amount of Return										£.	48	6 7
Loss on 4 years cultivation											—	16 1
										£.	49	2 8

From hence Mr. Richard Griffith junior observes, that on four years cultivation there will be a loss of 16s. 1d. per acre, to which must be added the expense of drainage; viz. £. 1. 16. making a total loss of £. 2. 12. 1. per acre, which would be the full purchase paid for bringing unprofitable red Bog to the value of at least £. 1. 10. per Irish acre, or 18s. 6d. per English acre per annum for ever. Let this estimate then be compared with the important object to be attained; viz. 400 acres of unprofitable red Bog converted into ground well worth £. 1. 10. per acre per annum, and the final account will stand thus; viz. 400 acres at £. 1. 10. per acre, amounting to £. 600 per annum, estimated at 18 years purchase, makes

	-	-	-	-	-	-	-	-	-	£. 10,800	—	—
Deduct £. 2. 12. 1. per acre on 400 acres	-	-	-	-	-	-	-	-	-		1,041	13 4
Net Profit	-	-	-	-	-	-	-	-	-	£. 9,758	6	8

Mr. Richard Griffith junior proceeds to give us his opinion on the applicability of Peat soils to white and green crops respectively, and observes, that there is a natural disposition in all plants towards particular soils, or in other words, that the food of certain plants is found more abundantly in one kind of soil than in another. From the observations he has made on the growth and perfection of different plants on boggy and moory soils, he is fully persuaded that they are infinitely better adapted to produce and mature green than white crops. The finest cabbages, turnips, carrots and parsnips, he has ever seen having been raised in gardens made in black Bog, with no other manure than a slight sprinkling of ashes produced by burning part of the same soil; and potatoes, he says, have such an affinity (if the expression may be allowed) for Boggy soil, that farmers always prefer planting the seed that has been raised on Bog to any other, and frequently send to a considerable distance to obtain it; on the other hand he has found, that although the crops of oats and wheat produced on peat soils have been sufficiently luxuriant, yet they have seldom yielded in proportion to their promise, the grain being neither so full nor so bright as that produced upon good upland. This circumstance, however, he states may have arisen in a great degree from the want of a sufficient admixture of limestone gravel, or other calcareous matter, a corrective always at hand in these Bogs, which, when applied in sufficient quantity, is invariably found to produce the most beneficial effects, and *vice versa*, as Bog stuff, exposed for some months to the atmosphere, well turned, and mixed with common earth and a small portion of caustic lime, is found to be an excellent manure for worn-out upland. He further observes, that were he to point out the most advantageous situation for a judicious and extensive farmer, he should place him on the margin of a Bog, upon which he should raise all his green crops, and the whole of the dung produced in the farm-yard by cattle fed on turnips, &c. might be applied to the improvement of the uplands, and he is fully persuaded (that if ever any extensive plan shall be put into operation for draining the Bogs) that not only the system he has just now suggested will take place, but a very considerable traffic will arise in the manufacture and sale of ashes, which will prove equally beneficial to the Bog improver and to the upland farmer.

He further states, that the foregoing system, although extremely profitable in the end, would, however, require a considerable capital to carry it into execution upon an extensive scale; and that it is almost unnecessary to observe, that the want of capital is the great obstacle to the internal improvement of Ireland. It may not therefore, he says, be improper to suggest a mode of rendering the Bog when drained of considerable value, by a more simple and less expensive process.

If the surface of the drained Bog, he observes, be suffered to remain inactive for three or four years subsequent to the drainage, a thick crop of common heath will be found growing on its surface intermixed with grass. This heath, and the decomposed Boggy soil which

which is immediately below it, he proposes should be ploughed up, gathered into rows, and burned; after which operation the surface of the Bog should again be ploughed lightly, the ashes spread, and rape seed sown; the rape should not be suffered to go to seed, but should be eaten off by sheep. After light ploughing and harrowing, grass seeds might then be sown, which in the course of a year would become excellent food for sheep and young cattle, but meadow should not be attempted. After a few years it may be expected that heath will again make its appearance, the process already described may then be again resorted to; viz. ploughing, burning, rape crop, grass, and the second crop of rape will be found to be greatly superior to the first. The expense of rendering the surface of the Bog valuable, by the means last described, he says will be trifling, and will be amply repaid by the value of the rape crop, and the Outlay will be returned in less than a year.

Mr. Richard Griffith junior says, that in the improvements already effected, rape appears to be the most favourite crop, at least in the commencement, but oats, potatoes and rye, are found to answer nearly as well. He has seen wheat tried on the surface of very deep red bog; the produce was tolerably good, but the grain was not full. Hemp had been tried by many persons with various success; when failures had occurred they were perhaps attributable more to ignorance of the mode of cultivation, and the proper methods of saving and drying, than to any imperfection in the peat soil. He observes, that this plant likes a deep soil, but will not thrive in wet; unless therefore the Bog shall have been completely drained, the soil to some depth turned up and exposed to the atmosphere, and intermixed with limestone gravel, there can be little hope of obtaining a valuable crop; but with these precautions he thinks the best success may be expected.

Mr. Jones observes, that throughout the whole of his District few attempts have been made towards the reclamation of any considerable part of the large tracts of Bog which it contains. The principal places that have been improved are at Toar, Middleton, Kilbresman, Tyrrell's Pass, and Kilduff near Philipstown; the whole extent reclaimed does not exceed two hundred acres. He states, that the mode usually pursued in the reclamation of such parts of Bogs as have come under his observation, was, after the space had been well drained, the surface in general was either pared off, or ploughed or dug up and thrown into heaps (if black Bog) through which a quantity of gravel or clay was mixed. These heaps were then fired, and the ashes afterwards spread on the surface, and either dug or ploughed in. This produced an excellent crop of rape; crops of potatoes and oats succeeded this, after which it was generally laid down with grass seed, and by the application of such manures as were most convenient, produced very good crops of meadow. He observes, that in spongy red Bogs, the process of burning is not usually pursued; the surface when dry being so light that little ashes (and those of inferior quality) would be produced. Marle in this instance (if to be had) is the best manure that can be applied to the surface, a thin layer of which would be sufficient to produce potatoes, oats, flax, &c. in succession.

Mr. Edgeworth states an experiment made by himself some years ago upon Bog that had been only partially drained, whereby it appears, that by the application of lime, limestone gravel and marle, in the course of 5 years cultivation, he brought 27 acres of Bog, which when first taken in hand was not deemed worth half a guinea per acre, to be worth and actually let for £. 1. 10. per acre per annum. He states, that during the 5 years process of cultivation, he had charged himself with half a guinea per acre per annum rent, and that by an accurate account of the transaction now in his possession, it appears that he had never had £. 100 capital employed therein. That after having his capital reimbursed, and after the payment of rent and every contingent expense, including wear and tear of the implements of husbandry and overseers wages, he had at the end gained £. 17 clear profit; and at that period, when the land was in meadow he had let it to a farmer (who had formerly refused to take it at half a guinea) at 30 shillings per acre per annum for the farmer's own life, and he states that it is now worth nearly double that rent.

The observations suggested by Mr. Edgeworth in the reclamation and improvement of Bog, and the process recommended by him to be pursued therein, are as follow: In the first place, he proposes to cut off all the springs and sloughs by appropriate drains, and then wherever a Bog, as that denominated No. 8, in his district, is covered with heath or weak plants of any other sort, he advises the burning off the rough surface in a dry summer, merely by setting fire to the heath, and permitting the fire to spread itself wherever it may meet with fuel. In other Bogs, where the roots of plants are strong and deeply sunk under the surface, he would immediately proceed to turn up the whole of the Bog with grubbing tools, and particularly with a long loy, a tool which is common in the western part of Ireland. As he advanced, he would cut narrow drains of 18 inches deep with Essex draining tools, wherever water lodged on the surface, and drains of fit dimensions wherever springs occurred, not previously discovered. The thick tough surface of the Bog should then be piled up in ridges to dry, and where the turf so dried yielded ashes that contained manure, as much of it as is possible should be burned in the rows as they stand, to save the expense of making it into heaps. What remains unburned after this attempt should be collected in heaps, and burned to ashes. The next operation is to put out some kind of clay upon the ashes after they have been spread, taking care soon to cover them with earth, to prevent them from being blown away.

Mr. Edgeworth does not approve of a system of navigable drains, for the transportation of the proper manures into the Bogs, but proposes to employ for this purpose portable Railways shod with iron, with appropriate carriages; the latter are made to be emptied at

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

either side of the railway, and when loaded with half a ton of earth, one of them can easily be pushed forward by one man; Mr. Edgeworth says he showed a railway constructed upon the above plan to several of his friends in 1787. The advantages proposed by this construction, were, to extend the use of railways to temporary purposes, and to reduce the expense considerably, by dividing into several parts the weight which is usually loaded on one carriage, so that the railway might be reduced in weight and cost, without being more liable to break than those that are in common use. Mr. Edgeworth adds, that this plan has been adopted in many places, particularly at Penrhyn slate quarry in Wales, where a number of small carriages loaded lightly supply the place of one larger carriage; by these means, railways may now be made sufficiently strong, though not one-fourth part of the weight or cost of ordinary railways. Mr. Edgeworth proposes that these portable railways should be supported on piles of five or six feet long driven into the Bog; and that they should be removed from place to place, so that after a series of railways had been laid to the distance of half a mile for instance, and after the carriage had emptied its load on each side of it, the railway may be detached and placed at the distance of two perches parallel to its former situation. We consider the suggestions of these railways as one of great utility, and which it will probably be found may be adopted with great advantage in the plans recommended by the other Engineers. The Plans and Estimates for their construction may be found in the Appendix to Mr. Edgeworth's Report, No. 4. By this it appears, that the proportion per acre of the capital of £. 500, to be expended in making the railways and carriages, would on 1,200 acres amount to about five shillings per acre; wear and tear about three shillings more; gravelling and removing machinery about 10 shillings. Mr. Edgeworth next observes, that this Estimate is made on the supposition, that the machines and railways would last 4 or 5 years, the time necessary for completing the improvement of 1,200 acres, so as to make the land worth 30s. per acre; the expense of the whole, Mr. Edgeworth thinks would be nearly as follows:

	£.	s.	d.
Wear and tear, and share of capital, per acre	-	-	8
Draining	-	-	10
Turning up surface	-	2	13
Digging and filling clay	-	2	13
Carrying out clay on moveable railway	-	1	14
Spreading clay and shifting the railway	-	-	10
Damages for gravel-pit	-	-	7
	£. 8	15	-

Equal to £. 5. English, per English acre.

To improve the Bogs of the whole District, amounting to 34,569 English acres, would according to this Estimate, cost £. 167,648 English. Thus a permanent income of nearly £. 30,000 English, could, he says, be obtained at less than six years purchase.

Mr. Edgeworth considers the plan that is here recommended as the first stage of improvement, and believes that it would make the Bog worth 25 or 30 shillings per acre, and he adds, that substantial and intelligent farmers would, for half as much more, double its value; but that poor tenants, if they were allowed to have more than a garden, and as much land as would support a cow with grass and hay, would soon wear out what had been done. Reclaimed Bog, he says, must be continually attended to; and if peat that will afford red ashes is to be found below the surface, and lime in any form be within reach, the Bog may be made worth four pounds per acre.

Mr. Longfield commences his observations on the improvement of Bogs, by stating, that in his district he has found good manuring gravel, sufficiently near the surface, to be raised without incurring much expense or trouble, and has accordingly noticed them on the Map, and would recommend, when such cases occur, that the stuff should be raised to the surface; but when the manures cannot be had nearer than 8 or 10 feet, he would not advise any attempt to diffuse their benefits.

He observes, that the different lines of drainage which he had recommended would be sufficient to reduce the surface of the Bog to a state of consolidation; but that this would not be sufficient alone to produce vegetation; the aid of manures is indispensable. On Moors and black Bog, the want of compost or manuring gravel would not be so severely felt, as that description of Bog produces strong ashes, by means of which the landlords are enabled to raise profitable crops of rape, potatoes, &c. &c. But as this species of manure is unattainable in the shaking or red Bogs, methods must be devised either to raise the understrata to the surface, or to convey into the interior such gravel or manures as the surrounding country affords; this last resource, with a few exceptions, is in Mr. Longfield's opinion the most practicable, and even this cannot, he thinks, be carried into effect without considerable labour and expense. However, the magnitude of the undertaking, and the benefits likely to result from it, have induced him to take advantage of the natural capability of the country, in affording means of conveying manuring gravel to the interior of the Bogs by the aid of navigable cuts; and therefore, wherever gravel may be had with a supply of water to command the summit of the Bog, Mr. Longfield has, in laying out the main drains, kept in view the further object of converting them into future lines of navigation, applicable, however, only to such purposes.

Mr. Longfield

Mr. Longfield further observes, that the Bog stuff raised in excavating for the navigable drains might be converted to profitable purposes, it might be brought to the Bog edges in the boats returning for a supply of gravel, and drawn from thence upon the uplands; he has seen the best crops in the country produced on light gravelly soils by this means only, and he is assured by gentlemen of respectability, that this species of manure is so valuable and certain in its effects, that it is generally used upon the uplands, not only bordering on the Bogs, but frequently at a distance of half a mile and more, until the carriage, according to the present mode, becomes more expensive than the species of return would compensate; and he states, that the value of Bog stuff is further exemplified in the interior of the country, by the care with which the turf mould at the bottom of the turf stacks is collected and spread upon the land with a small portion of lime or clay mixed with it. This compost is used with success in rearing garden stuff, such as cabbages, carrots, parsnips, &c. &c. And he is convinced, that if the inhabitants of the country were induced, when going for the Bog stuff, to bring a load of gravel with them, they might thereby have reclaimed many hundred acres round the verge of these Bogs, which, lying immediately adjoining the natural tops of the country, did not require a preparation of expensive drainage.

Mr. Longfield says, that the erection of locks in these deep bogs, is, in his opinion, entirely out of the question (where it is necessary to convey the manure from a higher to a lower level, he thinks we must be content with landing-places, in proper situations, by means of which, a load of gravel may be transferred from the boat on the higher level, to the boat on the lower one), which in most cases will not be found necessary, as either levels will generally commence or terminate in manuring gravels. He says, by these means manures can be diffused over the surface at a reasonable expense, when compared with that of horse work. Mr. Longfield states, that the quantity of surface which may thus be brought into cultivation will be great; for supposing that the operations of men with wheel-barrows, &c. cannot be extended more than 40 perches from the verge of the Canal on both sides, yet the quantity brought into improvement will be 160 Irish plantation acres, equal to 240 English acres in every Irish mile of navigation. The fee of which 160 acres, at the reasonable rate of 30 shillings per acre, at 5 per cent, would amount to £. 4,800, on the presumption that the effects of the navigable drains were confined to within 40 perches on both sides, but which can never be the case, when it is considered that their influence, combined with the surface drains, must extend much further, by means of which the gravel can be conveyed by cattle, either by back loads, or on sledges drawn over the pastures already formed by the labour of men only.

It is scarcely necessary for us to observe how useful an auxiliary to this system, Mr. Longfield would find in Mr. Edgeworth's plan of moveable railways.

The dimensions which Mr. Longfield proposes for those canal drains are fourteen feet at bottom, and to contain four feet depth of water; the boats to be flat-bottomed, and calculated to contain from fifteen to twenty tons, they would then be easily removed from place to place by one or two men. He says, that a navigation of this size, where no great surge of water would be occasioned to injure the sides, would keep in repair a considerable time, the advantages of which he calculates to outbalance any other mode whatsoever. To facilitate the object and save expense, he observes, there may be occasions for a few Bridges over the navigable drains, which can be made of Bog timber; all other passages over the main drains may be reserved, by only perforating the bottom, and leaving the surface untouched, as already alluded to in the small surface drains.

He observes, on the subject of improvements already effected, that the black and red Bogs held by Mr. Sadlier under Lord Digby, containing about 343 acres, being most judiciously intersected with main and cross drains (on a small scale), are now for the most part in a perfect and profitable state of agriculture, so much so, that a great portion of those Bogs, which when taken by Mr. Sadlier, were not worth five shillings per acre, would now produce from thirty to forty shillings the Irish acre. Mr. Longfield states, that the progress of this improvement consisted chiefly in draining, levelling and burning, by which means Mr. Sadlier has been enabled to rear abundant crops of rape, on an average from seven to ten barrels per acre, which, at the moderate rate of one guinea and a half per barrel, must have amply repaid his expenses, independent of creating a valuable and lasting property, which he now enjoys. Mr. Longfield also mentions the successful endeavours of Mr. Curtis, in reducing to a state of consolidation, a large portion of red and black Bogs, little less than 150 acres, a great part of which has been brought into cultivation within the last 15 years, and which at this moment are actually under sheep, and the remainder ready to receive any agricultural improvement.

Mr. Longfield says, that considerable improvements have been effected by Mr. Armstrong at Balever, Mr. Berry of Cloneen, and Mr. Woods of Garbally, which latter gentleman's improvements are by much the most extensive, amounting to near 240 acres, which being favourably interspersed with gravel hills, were more readily brought into cultivation. These, with their other natural capabilities, have been taken advantage of by Mr. Woods, who has now the chief part of his Bog in a most promising state of improvement. Much credit is also due to Mr. Berry, for his exertion and perseverance in tapping the Bog of Cloneen, by which he has completely drained several standing pools that contained from three to five feet water. He has also made some skreen plantations on the Bog that appear very healthy.

Mr. Longfield states, that in the middle of the Bog of Derrinlough, on the side of the road between Crankree Bridge and Derrinlough, there is a remarkable instance of the possibility

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

of changing the nature of actual red Bog from an unprofitable to a profitable state; it consists of a few perches, which, as far as Mr. Longfield could learn, had been cultivated by a poor man 11 or 12 years ago, and which (contrary to the received opinion, that Bog will revert to its original state of nature) actually produces good pasture to this day, although deserted and left in common with the rest of the Bog since the improver's death, notwithstanding the peculiar disadvantages of the place being above a quarter of a mile distant from the main land.

Mr. Townshend observes, that the whole of his district abounds in limestone gravel, and that the navigable drains proposed by him will afford the easiest conveyance possible; they are in many instances directed to the foot of steep gravel hills of from 50 to 80 feet in height, and of an inferior quality of ground, in order that a sufficiency may be procured with the least possible injury to the adjoining lands. One acre, he observes, of a gravel hill 50 feet in height, will cover 600 hundred acres of Bog one inch thick, and so in proportion. Taking the gravel hills at an average of only 30 feet in height, which is a low calculation, the one acre will cover 360 acres of Bog one inch thick; and supposing the broken ground to be afterwards totally useless, the purchase of an acre could not exceed £. 36, which would amount to 2 shillings per acre on the surface of the Bog, for damages of the ground from whence the limestone gravel is to be procured.

The plan which Mr. Townshend recommends for bringing the gravel into the Bogs, is to have flat-bottomed boats, with a platform even with the gunnel, and a double railway upon it, calculated for two rows of waggons or carriages to be constructed for the purpose, and over this, if necessary, another platform may be erected with a single railway upon it, having sufficient headway for the lower tier; a sheet cast iron railway to be laid on the ground between the gravel hill and the boat, for the waggons to run on, and when as many are placed on the boat as the railway on the platform will contain, two men will take the boat along the drains into the Bog, and then to have another railway, not exceeding 40 perches (280 yards) to run the waggons from the boat to any part of the surface; then to tilt them, and return with them empty, and as soon as they are all replaced on the boat, to return with it to the gravel hill, and repeat their operations.

Mr. Townshend further observes, that cast iron railways and waggons could be very advantageously used along the exterior edges of the Bog where gravel hills are convenient, and also in the small detached Bogs and other places that cannot be accommodated with a navigable drainage and boats.

Mr. Townshend observes, that the facility with which gravel can at any time be brought in by boats, renders it unnecessary to lay on more in the first instance than is really required to produce one crop, then to go on progressively increasing the quantity with each succeeding crop, until the Bogs are gravelled completely to any thickness, and they will become profitable from the first commencement of the business, instead of having to wait for the full quota of gravel before the crops are put down, and will not require so large a sum to be laid out at the first onset; Mr. Townshend has calculated one inch only of gravel, as being sufficient to produce a succession of crops, but not for a permanency; the quantity per acre will be nearly 218 cubic yards, which, at the rate of 6*d.* per yard for excavating and removing by boats, will amount to £. 5. 9*s.* per acre.

He also states, that the value of the Bog when drained and gravelled, provided it be properly done, will be nearly equal to that of the adjoining lands; and these in general may be averaged at upwards of two guineas per acre per annum; the Bogs therefore, when improved in the manner before-mentioned, with the advantages also of a canal conveyance to every part, he thinks may be estimated worth 30 shillings per acre yearly value at the least.

Mr. Townshend then proceeds to make the following Abstract of his calculations: "The aggregate expense of draining and improving all the Bogs in this District, including navigable drains, and opening a communication with the neighbouring country, will be as follows; viz.

	£.	s.	d.	
The navigable drains	-	-	-	3 — 2
Masonry on d ^o with inclined planes on the collateral cuts	—	17	7	
Gravelling the Bogs 1 inch deep	-	-	-	5 9 —
Drainage to lands	-	-	-	— 2 —
	£.	9	8	9 per Irish acre.
Which is equal to	£.	5	16	5½ per English acre.

Mr. Townshend goes on to state, that when once the drains are made in the manner before-mentioned, any future improvements on extensive tracts of Bog can be done much cheaper than by any other plan; and those persons who undertake to reclaim and cultivate them may very well afford to pay, by an acreable rent, for the convenience of navigation, from which they will receive so much benefit.

Mr. Townshend mentions a fact which may be worthy of notice, in respect to the reclamation of red Bog; he says, that a considerable part of the Bog of Bunnahendley, which extends nearly to the town of Athlone along the banks of the Shannon, and whose depth is from 23 to 33 feet, with a gradual descent from the surface of the Bog to the River, has by degrees been reclaimed; and it appears at the time of the Down survey, that this Bog contained

contained 1,173 acres; it is at present no more than 666 acres, a considerable extent of the red Bog having been improved.

With respect to the advantages of irrigation in the reclamation of Bog, we observe, that Mr. Edgeworth, Mr. Longfield, and Mr. Davy, all lay great stress on its beneficial effects; when it can be obtained from external rivers, there can be no doubt, but we think it highly material to observe, that the penning up the Bog water in the drains, and suffering it to spread over the surface of the Bog, may probably be found to produce widely different effects, as the Bog water is known to contain peculiar properties, which may be found injurious to vegetation.

As a practical proof of its efficacy, he adduces the instance of the river Clodagh, a constant stream running from the Slieve Bloom Mountains, and carrying with it quantities of fine sand and clay, which it deposits along its course. The effect of the sand thus deposited on the Bog is such, that the verges of it, which have been annually flooded for ages past, are now become good meadow, pasture and tillage, on sand and clay, under which there are in many places from 10 to 12 feet of Bog. He also states another fact, which proves, that these profitable verges have been made so by the effects of the Clodagh; namely, that the bed of the river itself rests on Bog of from 8 to 10 feet deep; this he has proved by boring in the centre of it, where, after passing through a stratum of gravel of 2 feet, he found a stratum of Bog 10 feet deep, which he thinks proves that the present course of the River is new, and that it must have been diverted into its present course since the formation of the Bog; for these reasons, Mr. Longfield recommends taking a supply of water from the Clodagh, to be used at all seasons if necessary.

The sub-strata of all these Bogs, Mr. Longfield says, appears to be a solid mass of clay mixed with limestone gravel, the latter not unfrequently covered with a thin stratum of clay or marle; but however desirable it may at first appear, that manures should be found under the surface of the Bog, which they are fitted to reclaim, the depth at which they lie will in most instances render this circumstance of little moment; fortunately, however, the boundaries of almost all these Bogs consist of hills of limestone gravel, as also generally the islands which rise in so many places through their surface. In our last Report we observed, that there was no spot, on the whole extent of these Bogs, above two Irish miles from the upland and cultivated districts; this is a circumstance of great moment, when we consider, that these boundaries generally present the manure that can be desired. It must not however be supposed, that it will often be necessary to bring the manure from so great a distance; for it is a singular fact, that owing to the indented and irregular figures of these Bogs, at least 4-5ths of their superficial extent is within half an Irish mile of the dry land which forms their respective boundaries, or the islands that they contain.

Planting.

ON this branch of the subject, Mr. Richard Griffith junior observes, that the antiseptic quality, so universally found in Bogs, must effectually prevent the growth of all plants that strike deep in ground, or depend for subsistence on a top root; we must not therefore, he thinks, expect to find the oak thrive upon deep Bogs. He states, that it will be advisable, previously to the planting of any trees upon Bog, to destroy this quality (so inimical to vegetation) either by exposure to the atmosphere, or by the admixture of lime, limestone, gravel, or other calcareous matter, the soil being turned up after drainage (which must be the first step towards every improvement on Bog) for 2 or 3 feet in depth, and exposed to the influence of the atmosphere, then mixed with a portion of limestone gravel, the success of the plantation, he observes, would be scarcely doubtful. The Scotch fir, in his opinion, grows better than any other tree on red Bog; he mentions, that he found growing in one of the wettest quagmires of the Bog of Portarlinton, an ancient fir tree of considerable magnitude; the Bog in this place was 19 feet deep, the tree had spread its roots horizontally to a very great distance around, and within the limits of these roots the Bog was perfectly dry, when at a very small distance beyond them it was so wet as to render the walking on it without the assistance of planks nearly impracticable. He states, that larch grows vigorously on shallow black Bog, and entertains no doubt, that larch and every species of fir, as well as birch, alder, and ash, would grow vigorously upon Bog, if the process above recommended were adopted.

Upon the subject of planting on Bog, Mr. Edgeworth observes, that many Bogs, after they have been drained to a certain degree, are capable of being planted, without any further care than to dig up and break the surface round each plant, but that wherever water settles after the trees are planted, it must of course be drawn off. He states, that in the Bog, No. 5, in his district, the growth of the Bog myrtle, and of some trees that had been planted on the border of the Bog, made him point it out in the Appendix, No. 5, as a proper place for an experiment upon planting Bog, without first claying and breaking it up. Among the young trees that he saw thriving on this Bog, he was surprised to find some vigorous larch; he has since seen in Bogs in the Queen's county, other instances of thriving larch. He does not recollect to have seen oak growing on Bog far from its edges; and he has been told by a gentleman of observation, that the roots of no trees can live in the lower part of deep Bogs; his own experience on this subject is but limited. He has seen large and strong Scotch fir in deep Bogs, and some good alder; but he has reason to believe, that common ozers do not grow well in such soil.

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

Mr. Longfield observes, that in treating of improvements upon such extensive tracts of plain surface, he conceives it to be of the highest importance to take into consideration the most efficient way of providing shelter; for this purpose, he proposes to intersect the Bogs with belts of skreen planting, in such proportions as local circumstances render necessary, always keeping in view to break the effects of the prevailing westerly winds. The object of shelter would not only thereby be obtained in a few years, but also a profitable growth of timber, which would contribute to repay the expense of draining, &c. The description of trees which Mr. Longfield observed to thrive best on Bogs, are firs, alders, birch, sally; a good specimen of which may be seen at the Earl of Charleville's, Mr. Curtis's, &c.

There are many plantations lately made, particularly on Lord Charleville's part of the Bog, which are in a thriving state, both on the verge and in the deep red Bog near the Glash bridge; this part, which he is certain was not less than from 10 to 15 feet deep, when the improvements were commenced about 18 or 20 years ago, is now covered with trees of different descriptions, chiefly firs, many of which would square from 6 to 9 inches; and his Lordship assured him, that they were planted in the actual red Bog, without any compost or earth balls, which might be presumed necessary for Bog plantations.

He reports another circumstance that may be sufficient to remove any doubt, as to the practicability of covering a great part of these tracts with plantations; he states, that the trees he has just mentioned, planted by Lord Charleville, are actually growing within a few feet of the depth of the ancient timber produced by the same Bog, and which is now several feet under the present surface, the stumps and roots however may be seen in the side of the plantation ditch, and many of them were necessarily cut away and raised, in making the drain on each side of the road, where their roots appear considerably above the under strata, which proves that this ancient timber must have grown on a stratum of Bog, without receiving any nourishment from the clay and gravel.

The only improvements in the way of plantation, mentioned by Mr. Townshend to have been actually effected in his district (except that on the Bog of Bunnahindly, near Athlone, already stated) are the plantations of fir made by Mr. Holmes, of Mount Prospect, on parts of the Bog adjoining his estate; and Mr. Townshend adds, that this gentleman has made drains on the surface of a large tract of Bog, with an intention of planting and improving it.

Mr. Adamson has also planted fir trees, and made surface drains on a part of his Bog near Corr.

Mr. Jones says, that the trees usually planted in such parts of the Bog in his district as have been improved, are, Scotch fir, spruce, larch, alder and birch, all of which seem to thrive well.

We have now only to state the expense at which each Engineer has estimated the execution of the works which he proposes in his district, the costs of a first improvement of the Bogs, and such as will place them in a state of profitable agriculture.

Mr. Richard Griffith junior, calculates the expense of drainage at £.1. 16s. per acre; and after entering into detail of the Outlay and Return, from a course of four years progressive improvement and cultivation, he states the ultimate loss thereon at 16s. 1d. per acre; which, together with £.1. 16s. per acre for drainage, amounts to £.2. 12s. 1d. per acre, being the total expense to be incurred in order to bring red Bog to the value of £.1. 10s. per acre per annum.

Mr. Edgeworth calculates the expense of drainage at ten shillings Irish, per Irish acre, which for 21,367 acres, the extent of the Bogs in his district, amounts to £.10,683. 10s. Irish; the expense of turning up and burning the surface, and of laying out clay and gravel by means of his portable railways, he estimates at £.8. 5s. per acre, including all charges; thus, according to his plan, the total expense for draining and reclaiming Bog, will be £.8. 15s. Irish, per Irish acre; and consequently to improve the Bogs of his district, viz. 21,367 Irish acres, would, according to his estimate, cost £.181,619 Irish, equal to £.167,648 English, for 34,569 English acres.

By such improvement, Mr. Edgeworth asserts the land will become worth 30 shillings per acre, giving a permanent income of nearly £.30,000 English for less than six years purchase.

Mr. Longfield reports, that the Bogs in his district amount to 44,591 English acres, the expense of draining which he estimates at £.87,233, being rather less than two pounds per acre. He has not given a specific estimate of the cost of laying out manure or gravel.

Mr. Townshend estimates, that the expense of drainage in his district (the Bogs of which contain 21,298 Irish, or 34,500 English acres, will amount to £.63,435. He has added a further estimate of £.18,530, for masonry in the proposed drains, and of £.8,000 for locks, in case of the construction of navigable canals of large dimensions; but these latter sums for the present, we put out of consideration, having already stated our opinion on the subject of extensive Canals in the Bogs; considering the expense of excavating his drains alone, (which however it must be observed, are of greater dimensions than we think necessary,) the expense per Irish acre for drainage, will be - - - - - 3 - 2

The expense of gravelling and other charges of reclamation, he states per Irish acre, at - - - - - 5 11 -

The total expense therefore of reclaiming Bog will be, according to Mr. Townshend's calculation, per Irish acre - - - - - £.8 11 2

And

And the total expense of reclaiming the 21,298 Irish acres of Bog in his district, will be £. 182,275. 7. 8. These Bogs he calculates will then be worth 30 shillings per acre, and thus an income of £. 31,947 will be gained at less than six years purchase.

Mr. Jones's district contains 42,370 English acres, the expense of draining which he estimates at £. 75,065, being at the rate of £. 1. 15. 5. per English acre, nearly.

He has not given us any information as to the expense of any further process in the reclamation of Bogs, nor as to the profit which would be derived from it.

The opinion in our former Report, showing how unfounded were the apprehensions of those who conceived that the supply of fuel would be diminished by the drainage of the Bogs, has acquired additional strength as we obtained additional information, and we do not think that there exists the slightest cause for apprehension upon this head; on the contrary, there can be no doubt that the supply of fuel will be thereby considerably increased.

In our first Report we submitted a detailed Statement of our Expenditure in two Accounts, forming the 2d and 3d article of its Appendix; commencing with the 19th September 1809, the day on which we held our first meeting, and ending with the 15th April 1810. As the forms of these Accounts were prescribed by orders of your Honourable House, we have thought it right to adopt them also in the present instance, and we have accordingly carried on these Accounts under the same headings, from the 15th April 1810, to the 5th January 1811, and have subjoined them as the 2d and 3d articles of the Appendix to this Report.

From these and the former Accounts, the nature of our expenditure is shown in the utmost detail. We shall here observe in general, that our total Expenditure during the year, from the 5th January 1810, till the 5th January 1811, may be classed as follows:

	£.	s.	d.
1. Salary of our Secretary and one Clerk, being the entire expense of our Establishment - - -	256	17	6
2. Salary and travelling allowances of (9) Engineers - - -	4,311	2	9
3. Ditto - - - - - of Surveyors - - -	4,198	7	10 $\frac{1}{2}$
4. Pay of staffmen, chainmen, and labourers - - -	2,030	2	11 $\frac{1}{2}$
5. Implements and contingent expenses for Engineers - - -	85	11	7 $\frac{1}{2}$
6. Miscellaneous payments - - - - -	129	17	11
Total - - £.	11,012	—	7 $\frac{1}{2}$

It must not however be supposed, that the total expenditure has been incurred upon the districts which form the subject of this and of our former Report.

The surveys of three other districts, Mr. Aber's, Mr. Brassington's, and Mr. Colbourne's, are completed; Mr. Longfield has also made considerable progress in his second district; and Mr. Richard Griffith junior has completed the greater part of another very extensive district, being the third which we have committed to his charge.

We think it necessary also to observe, in making any comparison of the work which has been done with the money which has been expended, and in justice to the Gentlemen whom we have employed, that the Engravings annexed to this Report can give no adequate idea of the degree of care and accuracy with which the documents in our possession have been executed. The original maps furnished to us by our Engineers, and which are on a scale which precludes their being engraved, whether considered as works of science or of art, reflect the highest credit on the Gentlemen who have been employed on them; and while they form in themselves most valuable working plans for any operations that may hereafter be undertaken, contain also such accurate delineations of the districts which they embrace, as will furnish the most authentic materials for any future map of Ireland. They are accompanied further with above a thousand miles of sections, drawn on the large working scale, showing not merely the depths of these Bogs, and the nature of the under strata, but marking also the precise height of every spot of their respective surfaces within the lines of section, above a line which we have marked on the mole in the Bay of Dublin, as the ordinary level of high water mark; we believe that there does not exist a similar *map of the levels* of any other country, a work which must be of great importance in determining the lines of any internal navigation which may in future be adopted.

We have found it impossible to complete our survey within the time prescribed for the duration of our commission; we have employed every Engineer we could find in Ireland, who would enter into our engagements, and of whose qualifications we approved. We have endeavoured to procure others from England and Scotland, but without success, upon the present rate of our allowances; a proof, we conceive, at least of the attention to economy with which they were determined on, and in which we should not feel to have been justified, if we had obtained less satisfactory Reports from the Gentlemen who have given us their assistance.

If it should be the wish of the Legislature that this survey should be continued, an additional grant of Money, and an Act of Parliament to extend the duration of our Commission will be necessary. The sum remaining in our hands is £. 2,338. 11. 1. Without a material addition to that sum, the surveys of the Districts beyond the Shannon, now in great forwardness, cannot be completed, and most of the expense already incurred upon them, will

—(2.)—
SECOND REPORT
ON THE BOGS
OF IRELAND;
(March 1811.)

will have been lost; we are not yet able accurately to estimate either the money or the time which the completion of the Survey of all the Bogs of Ireland would require, but we are inclined to believe, that the labours of another year from the expiration of our Commission, and the expenditure of a further sum of eleven or twelve thousand pounds, although they would certainly not see the task completed, would yet not leave much to be desired.

Dated this }
8th day of March 1811. }

J. LESLIE FOSTER. (L.S.)
HANS BLACKWOOD. (L.S.)
WILLIAM GORE. (L.S.)
RICHARD GRIFFITH. (L.S.)
HENRY HAMILTON. (L.S.)

—(3.)—

THIRD REPORT ON THE BOGS OF IRELAND :

April 1814.

IN our FIRST and SECOND Reports, we submitted to Your Honourable House, the Reports which we had received from our Engineers, on Six large Districts, containing in the whole 233,538 English acres of Bog.

We now proceed, in the execution of our Commission, to lay before Your Honourable House, the Ten following Reports, which we have since received from our Engineers :

	Containing of Bog, English Acres,
(1.)—From Mr. LONGFIELD; on the District of <i>Lough Gara</i> , situated in the Counties of Roscommon, Sligo and Mayo,	83,689.
(2.)—From Mr. AHER; on a District lying between <i>Roscrea</i> and <i>Killenaule</i> , situated in the Counties of Tipperary, Kilkenny and the Queen's County	36,025.
(3.)—From Mr. AHER; on a District lying to the Westward of <i>Maryborough</i> , and situated in the Queen's County	14,754.
(4.)—From Mr. COCKBURN; on a District in the Western extremity of the County of <i>Clare</i>	22,340.
(5.)—From Mr. BRASSINGTON; on a small District on the Banks of the River <i>Barrow</i> , in the Counties of Kildare and the King's County	7,459.
(6.)—From Mr. JONES; on the District of <i>Lough Corrib</i> , lying in the Counties of Galway and Mayo	83,724.
(7, 8, 9.)—From Mr. BALD; on three large Districts in the County of <i>Mayo</i>	161,962.
(10.)—From Mr. TOWNSHEND; on a great District surrounding <i>Lough Neagh</i> , and extending to the Mouth of the River <i>Bann</i> , lying in the Counties of Antrim, Down, Armagh, Tyrone and Londonderry	64,855;—
Exclusive of 10,673 Acres of Lands, inundated by the Winter level of the Lake.	

The Bogs in these Districts are, internally, of the same composition as those we have already described; and are similarly circumstanced: Externally, they are intersected or bounded by streams, to which their surfaces have ample fall for the purposes of drainage; divided by strips of gravelly soil; surrounded by dry upland; and generally varied with islands; consisting, except in a few instances, of limestone gravel (the substance best adapted to their improvement;) their average depth, and the nature of the under strata, agree with those of other districts.

In our First and Second Reports to Your Honourable House, we have so fully detailed the principles of Drainage and agricultural Reclamation of Peat Soil, collected from the opinions and inquiries of our Engineers, that, to enter again upon the same subject, would only lead us to repeat what has been already stated. Our general Observations, resulting from the whole of the inquiry, will be found in the conclusion of our FOURTH and last Report, which we submit to Your Honourable House at the same time with the present; we shall therefore here confine ourselves to pointing out a few of the more remarkable instances of successful improvement, which has been effected in these Districts.

Mr. Longfield gives us the following account of an improvement effected on the estate of Lord Dillon :

“ The Bog where these improvements were effected, lies on the south side of the road from Lough Glyn to Castlereagh, and joining the lands of Aughalour, which it must be observed is a hill of the finest limestone in the county, and where the only limestone quarries are to be had in that neighbourhood; it is therefore not surprising to find subterraneous communications

communications round the verges of those lands, being composed of porous limestone, rock and gravel. At the foot of this hill, Lord Dillon laid out a certain portion of red Bog, in lots for his labourers, which was granted to them rent-free (a well adjudged and great stimulus to improvement) ten or twelve years ago: they commenced by building cabins in the driest part of the Bog next the land, and by cutting away the Bog as fast as their means would admit: During the progress of these operations, it was discovered that the under stratum being about eight or ten feet below the surface, was composed of limestone and gravel of the best description, suited to the purposes of Bog improvement. It was therefore suggested, that pits should be made in the Bog for the purpose of raising this manuring gravel to the surface, which was accordingly adopted; and the system continued with such effect, that they have now completely reclaimed ten or twelve acres, which, from being as bad sponge Bog as any in the country, now produces as good crops of potatoes, oats and hay, as any upland in the neighbourhood. The part thus reclaimed, was originally from four to eight and ten feet deep; the chief of which the improvers cut away for turf before they commenced gravelling the surface, but finding that operation too slow, they are now determined to gravel the natural surface of the Bog after being drained, which some of the most intelligent of them assured me, they had no doubt would succeed."

Mr. Longfield further informs us, that he had the satisfaction to find, that Doctor Richardson's system of Bog improvement, has been long anticipated by almost every poor tenant in the islands of Cloneagh, Cloonagh, &c. &c. belonging to Mr. French; "at the former of which Islands, says Mr. Longfield, I was gratified on viewing a specimen of fiorin grass cultivated on red Bog about twenty feet deep; this piece of Bog, after being drained and levelled, got a sprinkling of gravel, and was sown with cabbage-seed two years ago; last year it was planted with potatoes, which being dug out, was in spring of the present year (1811) laid down with fiorin strings, exactly in the way recommended by Doctor Richardson; the whole piece under the grass contains 33 perches of Bog, which has this year produced no less than *two tons weight* of hay, which, as the common people of the country say, is better for horses than hay and oats; and will fatten a beast much sooner than any other kind of forage which they are in the habit of using in that country. This circumstance (was any additional evidence necessary) at once proves that the red Bogs may all be reduced to tracts of profitable pasture and meadow; and in many cases may be applied to the produce of oats and potatoes, if gravel can be had from the under strata, as at Aughalour."

Mr. Aher informs us, that within these few years, upwards of 200 hundred acres of Bog in different parts of this district have been planted with trees of various ages, from two to ten years, consisting of Scotch fir, spruce fir, larch, oak, ash, alder, birch, beech, hazel and timber sallow; almost all of which appear healthy, and promise to do well. The Scotch fir is the most abundant in proportion. Some of those trees are planted on wet red Bog, twenty feet from the gravel, others on compact black Bog fifteen feet in depth; and some have had a few shovels full of gravel thrown under the roots when planted on the light spungy turf, which evidently answers better than being without it.

Those trees that have been planted on firm black Bog, thrive as well as the same species on upland.

Mr. Lidwell, of Dromard, planted some larch and Scotch fir eleven years ago, and they are now as good as any trees of the same age on the upland in the vicinity; Messrs. Birch of Roscrea, have planted about 70 acres of cut-out Bog and wet red Bog; the former are thriving as well as the generality of plantations on upland; the latter they have only commenced on last season, and the number which have missed are not by any means unusual.

Mr. Aher describes a successful improvement of Bog by Mr. Smith, of Racket Hall. He states, that on the north part of the division near Racket Hall, the process of improvements has been carried on, with great success, on red fibrous as well as black compact Bog, which have produced abundant crops of potatoes, oats and hay; and the Bog which had long lain in a state of sterility, has been increased in value nearly equal to the adjoining upland farms.

J. LESLIE FOSTER. (L. s.)

WILLIAM GORE. (L. s.)

HENRY HAMILTON. (L. s.)

HANS BLACKWOOD. (L. s.)

April 1814.

—(4.)—

FOURTH REPORT ON THE BOGS OF IRELAND :

April 1814.

IN our Three former Reports, we submitted to Your Honourable House, the Reports which we had received from our Engineers, on Seventeen large Districts, containing 731,976 English Acres, of Bog, particularly surveyed.

We now proceed to lay before Your Honourable House, the following Reports which we have since received, and with which we propose to close the execution of the Commission intrusted to us by the Legislature.

	Containing of Bog, English Acres,
(1.)—From Mr. <i>Nimmo</i> , on the District of Iveragh, forming the South Western extremity of the County of Kerry - -	43,567
From Mr. <i>Nimmo</i> , on the following Districts :	
(2.)—The District of the River Kenmare, in the County of Kerry - - - - -	14,605
(3.)—Of the Rivers Laune and Lower Maine, in the County of Kerry - - - - -	17,990
(4.)—Of the Upper Maine, in the County of Kerry - -	8,566
(5.)—Of Slieve Luaghar, in the Counties of Kerry and Cork - - - - -	32,902
(6.)—Of the River Cashen, in the North of Kerry - -	31,514
	105,577
(7.)—From Mr. <i>Edgeworth</i> , on the District of Loughree, situate in the Counties of Longford, Leitrim, and Roscommon -	26,630
(8.)—From Mr. <i>Griffith</i> , on the Southern extremity of the District of the River Suck, in the Counties of Galway and Roscommon - - - - -	76,848
(9.)—From Mr. <i>Griffith</i> , on the Northern extremity of the same District - - - - -	52,390
TOTAL -	305,012

Exclusive of above 500,000 English acres of Bog, in the counties of Kerry and Cork, which, though generally examined by Mr. *Nimmo*, have not been made the subject of a specific Report.

From Mr. *Griffith*,—a general Report on the Mountainous District in the counties of Wicklow and Dublin :—A similar Report, from Mr. *Griffith*, on the Mountainous District of Erris, Tyrawley, Burrishoole, and Tyreragh, in the counties of Mayo and Sligo :—And a similar Report, from Mr. *Nimmo*, on the Mountainous District of Cunnemara, in the county of Galway.

IN our former Reports, we have so fully submitted the opinions of Mr. *Edgeworth* and Mr. *Griffith*, on the practicability and the profit of reclaiming Bogs, and their view of the best means adapted to its accomplishment, that it cannot be expected their present Reports should furnish much additional matter on the subject; they must rather be considered as applications of their principles to the new districts, conducted with the same accuracy of detail that has distinguished their former labours.

Mr. *Nimmo*, has not however, before, had occasion to furnish us with his ideas on these subjects; and we consider his Reports on the various and extensive districts comprised in these surveys, as highly valuable additions to the information which we have hitherto collected.

The extensive district which has been surveyed in detail, by Mr. *Nimmo*, embraces nearly the whole of the county of Kerry, and a part of the county of Cork, and contains much variety of surface, and a vast extent of Bog; in many instances, essentially different in its character and circumstances from those which we have hitherto considered.

For the improvement of elevated or mountain Bog, of which a great proportion of this district appears to consist, Mr. *Nimmo* principally recommends Irrigation; the advantage of which, in reclaiming Bog, he states, has been proved by experience, in some few instances in Ireland, but principally in Scotland, where the Bogs are often found to be circumstanced very similarly to those of Kerry. Mr. *Nimmo* observes, that wherever a stream flows through Bog, it appears to prevent the growth of the Bog plants, and the vegetation of wholesome grass is rapid on its banks. Whether this effect is produced by a mechanical transport and deposition of the soil, or by the dilution and correction of the astringent principle abounding in Bog, Mr. *Nimmo* does not decide; but he proposes irrigation accom-

panied

panied by shallow drainage, such as will carry off the stagnant surface water, as peculiarly applicable to the mountain Bogs of Iveragh and Dunkerrin district. From his calculations, which are ingenious, it appears, that one-tenth of the Bogs may be irrigated at one time, by a judicious distribution of the mountain water. His plans will be found detailed in his Report; and he estimates the expense of this operation at only one guinea per acre. Bog thus improved, he says, will produce green crops in abundance, of no small importance in a country like Iveragh, where cattle are bred in great numbers, and where butter is the principal article sold for the farmer's profit. The general principle of this mode of improvement, he states to be as follows:—

“The catch-water drain is to be first formed on the edge of what in Scotland is called bent moss, or on the boundary between the Bog and Mountain; this will answer at the same time as a head fence; the Bog is next to be marked off in ridges, at distances of one perch asunder, and a small furrow taken out with the spade one foot wide and ten inches deep; the spade used for this should be a foot wide, with a small feather, which will save time in casting; if the Bog be pretty flat, the whole declivity will be wanted in the furrow, which must therefore be drawn in the direction of the fall, and a small water furrow of moderate depth drawn here and there obliquely across the ridge; if the Bog be not flat, the original furrows may be made obliquely down the declivity, and will of themselves act as water furrows. The Bog must now be left some time to get relieved of the surface water. In the next place, a small path is to be formed, by carrying gravel and earth out on the middle of every third ridge, so that two ridges may be left in the original state, between every two other ridges which have a path in them. The width of the path may be three feet at first, and will be at least six inches deep of stuff, as the turf from the furrow on each side is cast into the middle of that ridge. The most convenient way of forming this road will be, by the wheelbarrow and planks; if that is not to be had, a hand barrow must be employed.

“This path is intended for horses with panniers, by which it might be extended afterwards to six feet wide; and at least it may be proper to make some turning places on it of that width.”

In the next place, he proposes that the Bog should be dug up and carefully formed into ridges, which however must not be so high as to render the middle liable to injury by drought. The higher parts of the Bog are to be levelled down into the hollows, the surface of the ridge is to be pulverized with the spade, hoe or otherwise; and as it gets dry, he proposes that the ridges which have the path in the middle, should be harrowed by horses, with the help of a splinter-bar somewhat longer than common. A top dressing of such manures as are suggested by Mr. Nimmo, is then to be applied, which may be carried on the Bog by means of horses and panniers; the Bog is to be left for one year, to consolidate in the interior and pulverize on the surface, that part which is intended for pasture being sown with grass seeds.

But the tenant, Mr. Nimmo observes, will naturally look for some crop, the very first year after performing this labour; and where a dressing of shell, sand, or other calcareous matter has been applied, the ground may be sown with oats, and a tolerable crop may be relied on. But potatoes are more likely in this country to repay the cultivation; a crop therefore of these may be taken in the usual way, that is, by forming beds across the intended ridges, earthing over the plants with the stuff taken from the trenches; manure however or earth in this case will become necessary; the manure may be greatly increased in quantity by intermixture a few weeks before-hand with the turf or other vegetable matter. Next year the beds may be formed into ridges by filling up the intermediate trenches, a top dressing of sand applied, the Bog sown with oats or wheat, and harrowed in by horses or by men.

The third year of cropping may be oats or barley, with perennial grass seeds, which being cut for hay next year will leave the ground a tolerable meadow.

The expense of this improvement Mr. Nimmo estimates at £. 9. 14. 2. per acre; and the potatoe crop he values at £. 10. 8. giving a profit of 13s. 10d. per acre, over and above the total expense of the improvement, and leaving the Bog in a state that will produce a considerable annual rent, in many instances of at least £. 3. per English acre. Mr. Nimmo has given other rotations of crops applicable to the reclamation of Bog in mountainous districts; and he shows, by an ingenious calculation, that in Iveragh (where the expense of a horse per diem does not exceed the wages of a labourer) two labourers and one horse can improve five acres of Bog in one year, and derive an adequate maintenance from the produce. It appears, that in this mountainous tract there is hardly any limestone; shell, sand, and sea weed are used as manures.

Thus far with respect to Bogs in mountainous countries, where the extremities of the Bogs being on higher levels than the interior, usually present great facilities for irrigating the interior: but in flat countries the case is widely different; in these the surface of the Bog is almost always more or less convex, and this circumstance, except in very particular situations, will generally preclude the adopting of this powerful means of amelioration. These bogs, in flat countries, are also of a depth vastly greater than in mountain districts; such, says Mr. Nimmo, require more capital for their improvement; nevertheless his calculations deduce that Bogs of this nature, such as are common in the flatter parts of his district, may be improved at an expense per acre not exceeding the value of the first crop obtained, and that the land so improved, will afterwards afford a permanent rent of one-seventh of this amount.

—(4.)—
FOURTH REPORT
ON THE BOGS
OF IRELAND;
(April 1814.)

Mr. Nimmo adduces a practical instance of successful reclamation, in the wild country which forms the subject of his Report.

He informs us, that a Mr. Murphy has taken a lease of fourteen hundred acres of Bog, and of the adjacent Mountain, from Judge Day, and has already built a number of cottages on it. He limes at the rate of one hundred barrels, which cost 33s. 4d. but which, with carriage, breaking and burning, comes to about £.7. 10s. per acre; then having drained and dug the field, which is not done under 50s. more, he takes one crop of potatoes, about three Kerry barrels of 21 pecks; taking these at 4s. per peck, the produce of the first crop - - - - - is - £. 12 12 —

Next crop, better, - - - - - say - 16 — —

Third crop, worse, - - - - - say - 12 — —

A crop of oats, - - - - - worth 10 — —

When he leaves it for meadow, and it pays in that state a rent of £. 4, or four guineas per acre. He finds the potatoes raised from Bog, and those from earth, much of the same quality; the first are not so dry, but larger and more productive.

With respect to Drainage, Mr. Nimmo's opinion is, that surface draining is alone adapted to the reclamation of Bog: He proposes catchwater drains to intercept the waters from the higher grounds, and then a system of shallow drains to deliver the surface water of the Bog into the natural streams, and so contrived as to further, if need be, the business of irrigation. These drains will of course vary in dimensions and number, according to the wetness of the Bog; but he thinks that in no case ought they to exceed six feet in depth: The drainage, Mr. Nimmo states, may in general be effected at the rate of 12s. 3d. only, per English acre.

When the Bog has been drained, it is to be consolidated by an admixture of soil; this, he tells us, may be effected in various ways:—1st, By laying out soil as a top dressing: But this is the most expensive mode of improvement; the cheapest rate at which it can be executed being £. 5. 9s. per acre, and the expense in some cases amounting to three times that sum.— 2dly, by Irrigation; which uniformly appears to convert the surface into soil — 3dly, by Liming and repeated Ploughings; which, in process of time, Mr. Nimmo assures us, will convert the surface into vegetable mould.—For the details of these operations we must refer to Mr. Nimmo's Report.

Mr. *Richard Griffith*, in his Report on the district of the river Suck, furnishes to us valuable instances of considerable Bogs which have been actually reclaimed, and which continue to afford a large profit to the reclaimers. After these, he observes that the Bog improvements at Woodlawn are amongst the most perfect: They amount altogether to about 292 English acres; 25 acres of which are under plantations, now growing with great vigour. These improvements were commenced about the year 1760, by the late Mr. French of Woodlawn, and have been continued by his son Lord Ashtown. Mr. Griffith observes, that they effectually contradict an assertion frequently made, that Bog, however reclaimed, will again return to its original state, if left undisturbed for a few years.

For the detailed account of these improvements, so encouraging to reclaimers, we must refer to Mr. Griffith's Report.

The soil of these reclaimed Bogs, when first turned up, is, as Mr. Griffith observes, of a dark brownish colour; its specific gravity, when compared with earthy soils, is certainly light, but it is much heavier than common Bog stuff; the whole of the vegetable fibres have disappeared at the surface, however, at three feet deep, the mossy structure is still visible.

The plantations of trees upon the Bogs at Woodlawn, are all in a very flourishing state; some of which, he observes, have now been planted 55 years.

It is with pleasure that we note this circumstance; for there are few prejudices more inveterate on this subject than a persuasion, that it is in vain to plant upon a Bog.

In this plantation the ash appear to be the best; the roots of the trees growing on the Bog have not shot down, but have grown quite on the surface; some of them, particularly the ash, have formed a hillock of roots above the general surface of the Bog; the top of the hillock is covered with soil, but at the sides the roots appear uncovered; they differ from common roots, as they are coated with a strong bark similar to that which covers the stem of the tree.

Mr. Griffith informs us, that the improvements on Bog made by the Bishop of Clonfert, though not very extensive, deserve attention, from the very uninviting prospect which they held out previous to their drainage. The Bog of Clonfert, of which they form a part, is very wet, and is deeper and more extensive than any in that part of the country, and upon the whole exhibits a most unpromising appearance to the reclaimer of Bog; the Bishop of Clonfert has nevertheless effected a valuable improvement by the common method of draining and manuring with limestone, gravel, or white shell marle, of which there are inexhaustible quantities along the banks of the Shannon. The crops which Mr. Griffith saw on the Bog at Clonfert were wheat, oats and hay. The produce of the wheat crop was considerable, but the grain small and not well coloured; the oats and meadow were both very good. The Bog fields are for the most part surrounded by double ditches; and here again we find an instance of successful plantations; they have been made without any manure in the spaces between the fields; the trees, says Mr. Griffith, are in a thriving state, particularly the Scotch fir, birch and poplar.

Mr.

Mr. Griffith adduces another instance of successful improvement effected by Mr. Hodson; and after detailing the particular mode by which it has been accomplished, observes, That it thus appears, that Mr. Hodson has a return of £.5. 9 s. per acre per annum profit on his reclaimed Bog, for four years; and further, that the Bog is, at the end of that period, of such value, as to let as meadow ground for three years, at the rate of £.5 per acre per annum, or if let on lease of 21 years, at £.1. 10 s. per acre.

—(4.)—
FOURTH REPORT
ON THE BOGS
OF IRELAND;
(April 1814.)

Mr. Edgeworth and Mr. Griffith, in the Appendixes to their respective Reports, have furnished to us a narrative of the practical success of the experiment of Reclamation, conducted on a very considerable scale, at Chat Moss in Lancashire, visited by them.

“ This Moss,” says Mr. Edgeworth, “ which is of considerable extent, is in every respect similar to most of the Bogs which I have surveyed for the Board; its vegetation, depth, consistency and levels, resemble an Irish Bog so nearly, that no sensible difference can be discerned. Mr. Roscoe has divided a great portion of this moss into compartments, by parallel drains of four or five feet wide, and as many feet deep; these drains are in general about sixty yards asunder; smaller water tables are cut in proper places to carry off the surface water; the moss is then covered with four hundred loads to an acre of clayey marle; this covering is laid on by means of short light iron railways, which can be removed from place to place; these railways rest upon short joists of cheap wood, eight or nine inches broad, and upon the railways are small carriages mounted on cast-iron wheels, which are from one to two feet diameter; these carriages are pushed forward by men; and when the soil has acquired by this means some consistency, horses furnished with wooden clogs twelve inches square, which they soon learn to manage with facility, are employed to plough and harrow with very light ploughs and harrows. The loose surface of the Bog is easily tilled, and various crops are obtained by sowing and dibbling in the usual manner. In many instances, the first crop has paid the immediate expense of cultivation; by immediate, I mean the labour and seed, exclusive of the prime cost of the apparatus and of its repairs.

“ I happened to visit Mr. Roscoe on the day after his having sold, for ten thousand pounds, one thousand acres of that part of Chat Moss which he had improved, and which he held for a lease of ninety-nine years.”

This successful experiment must make a greater impression on the public mind, than all that can be theoretically advanced; “ and it may be reasonably hoped,” says Mr. Edgeworth, “ that it will induce some similar attempt upon a large scale to improve Bog in Ireland.”

Mr. Griffith's statements on this subject so nearly agree with Mr. Edgeworth, that we feel it unnecessary to quote them.

After the numerous Surveys (conducted under our direction) of the flat Bogs lying intermixed with the arable and cultivated lands, in some of the richest and most populous districts of Ireland, we have thought it right to procure a general examination of the most remarkable Mountain Districts which are covered with Boggy surface, but which, in their present state of desolation and abandonment, did not appear to us to justify the expenses of a particular survey.—In these we have confined our Engineers to more general Reports, accompanied with such MAPS as our Engineers could furnish, from the best materials already in existence, corrected by their own general surveys.

For this purpose, we committed to the care of Mr. *Richard Griffith*, the district of Mountains lying within a few miles of the Metropolis, and occupying a large portion of the counties of Dublin and Wicklow.

We further gave in charge to Mr. Griffith, the wild regions which occupy the north-west of Mayo, and the north of Sligo, known under the denominations of Erris, Tyrawley, Burishoole, and Tyreragh.

And we intrusted to Mr. *Nimmo*, the extensive and desert districts of Cunnemara, occupying the west of the county of Galway.

It appears from Mr. R. Griffith's Report, that the Bogs which lie interspersed amongst the Mountains in the first-named district, exclusive of the general covering of the high mountains, may be estimated at about 97,000 English acres; and he gives the fairest grounds for hoping, that not only they, but a considerable portion of the mountain soil, may be improved at a small expense, so far as to afford excellent pasture and meadow.

Mr. Griffith observes, that these Mountains differ, in climate and local circumstances, from all other uncultivated districts with which he is acquainted. These peculiarities are described at length in the progress of his Report; they consist chiefly in the facility of access to the uncultivated parts, by means of roads, the vicinity of highly improved lands, and industrious inhabitants; the frequent occurrence of beds of limestone, gravel and marle, affording the best manure for the amelioration of mountain soils; and lastly, the uncommon mildness of the climate.

Mr. Griffith seems very much to agree with Mr. *Nimmo*, as to the utility of irrigation in the improvement of mountain Bogs. On the precipitous sides of mountains, where ploughing would be difficult, he recommends, that intercepting drains be cut nearly on a level along the face of the declivity, to catch the water which may fall from the summit; and he is of opinion, that these drains will be found sufficient without others, and to render the surface comparatively fertile.

—(4.)—
FOURTH REPORT
ON THE BOGS
OF IRELAND;
(April 1814.)

Mr. Griffith observes, that near the barrack of Glencree, he had an opportunity of observing the beneficial effects of an intercepting drain. About two years ago, a turf hole was cut on the declivity of a boggy hill, which had a scanty coat of grass vegetating on its surface; the turf hole immediately filled with water, which flowed from the wet bog above it; to avoid this inconvenience, a small drain was cut to intercept the water from the upper part of the hill one foot in depth, and was carried on nearly in a horizontal direction, fifty yards on either side of the turf hole, and six feet above it: Mr. Griffith saw the place in very wet weather, a year after the drain had been made; above it, the surface was wet and soft, and the grass scanty and very unhealthy in its appearance; below it, the surface was perfectly firm, and was covered with luxuriant grass. The beneficial effects of this small drain were visible for more than fifty yards downwards.

We believe that many unsuccessful attempts to drain Bog have proceeded nearly on an inversion of this principle, expecting that the drain should operate principally upon the Bog on the higher level. We believe, however, that in all instances of bog improvements, the effect really produced will be found rather to agree with the instance adduced by Mr. Griffith.

Mr. Griffith has given a Sketch of the mineralogical and geological features of this district; which is interesting in many points of view, and as connected with agricultural improvement, of considerable importance. In mountain districts, above all others, the quality of the soil depends upon the nature of the rock; and as the various soils to be found in such situations frequently act as manures on each other, a knowledge of their component parts must be useful to the mountain farmer. The tract of mountain which Mr. Griffith describes, is composed partly of granite, partly of slate, and other stratified formations. In the vallies are found limestone, gravel, and not unfrequently calcareous clay marle.

It appears that, in the administration of the Earl of Hardwicke, steps were taken towards establishing, in these mountains, a Settlement composed of the disbanded soldiers of every Highland fencible regiments. Circumstances occurred to prevent the completion of the plan; but it may not be unworthy of the attention of Government, should the return of peace afford an opportunity for carrying measures of this sort into effect.

Mr. Griffith, in his report on the Mountain district of Erris and Tyrawley, informs us, that this dreary country is essentially different from any thing that we had before committed to his charge; the surface wild and rugged; and in most places the hills and the plains, the summits of the mountains, and the valleys covered with a shallow stratum of black Bog.

The mountainous districts of Erris and Tyrawley, exclusive of Tyreragh in the county of Sligo, containing altogether about 477,850 English acres, of which about 152,260 English acres are either in a state of cultivation, or covered with sand; 155,500 English acres are nearly unproductive mountain, and 170,090 English acres are unprofitable red Bog. Instances are not however wanting in this country, to prove what may be done by perseverance and judicious encouragement from the landlord to his tenants. Forty years ago, says Mr. Griffith, the mountains in the neighbourhood of Westport were in a state very similar to that which the mountains of Tyrawley and Erris now exhibit; many thousand acres of these once dreary wastes are now in a comparatively high state of cultivation, owing to the prudent and liberal arrangements made by the late Marquis of Sligo, who gave the people long leases at low rents, finding them disposed to give their labour towards the reclamation of waste lands, provided that they and their children might be allowed to enjoy the fruits of their industry. The system of improvement usually adopted in the mountains of Westport was, first to cut off the water from the mountain above, next to plough up and burn the surface, and afterwards to lime it. The whole of the lime that has been laid out on the face of those mountains, was carried in panniers on horses backs from the sea-shore at Westport, which is the only place in the country where it can be procured.

The Westport mountains, like those of Erris, are chiefly composed of mica slate, and the effect which a small portion of lime has in fertilizing a soil arising from the decomposition of such rocks, is almost miraculous. The fertilizing effects of lime on this soil were first brought into notice in the neighbourhood of Westport, by the late Marquis of Sligo, through whose example and arrangements, as already mentioned, the whole face of the country has been changed, and under whose encouragement the once paltry fishing village of Westport has now become one of the handsomest and best built towns on the west coast of Ireland. Mr. Griffith observes, that he has been credibly informed, that eighty years ago there was but one small field of eight acres of green ground between Castlebar and the sea coast, and this was round Westport house; and within 40 years the roads to the west did not pass Castlebar. At present a Mail Coach comes into and leaves Westport every day; and within the period of 40 years, the town has increased in population from about 200 persons to two thousand five hundred, and the houses have been changed from a dozen dirty fishermens huts, to streets built with unusual regularity.

Mr. Griffith justly observes, that the formation of good Roads, is the first object to be attended to in the improvement of such a country; without them no inducement is held out to the industrious man to cultivate more land than is absolutely necessary for his own immediate subsistence, as he possesses no means of bringing his produce to market; and throughout the great district now under consideration, roads seem hardly to exist. Mr. Griffith brings the fact under observation, that the want of roads in this country limits the production of corn to what can be consumed in illicit distillation, which is now carried on there to a considerable extent. The spirit so manufactured is taken out of the country

country on horses backs, over moors and mountains, upon which even men find it difficult to walk; and he observes, that if this illicit distillation were now stopped, the growth of corn in the country would be put an end to, as the inhabitants have no possible means of taking their produce to market.

With respect to drainage, Mr. Griffith is very decided in his opinion as to the improvement of those mountains, by the formation of intercepting drains, to serve as irrigators. A single intercepting drain, he observes, judiciously laid out on the sides of many of these mountains, would have the effect of laying dry, hundreds of acres below them, which are at present (owing to springs issuing from fissures on the sides of the mountains) so wet and swampy, that no beast dare venture to walk on the surface. When the intercepting drain had rendered the mountain sides sufficiently dry, they might be converted into flooding courses to irrigate the land beneath; and these flooding courses might be supplied with water by the construction of rough weirs in any of the neighbouring mountain streams, so as to divert the water from its natural course into the intercepting drain, then to be used as a flooder or irrigator.

If this very simple species of improvement were skilfully carried into execution, in all the favourable situations throughout this mountainous district, Mr. Griffith has no doubt that nearly one hundred thousand acres of land would be rescued from their present swampy and nearly unproductive state, and would become of great value, as rearing-ground for young cattle. He adds, that some of these hills might be rendered very productive at a trifling expense; but particularly Ballycollen, Ballyknock, Mama, Choy, &c.; they all contain limestone; and the water of the streams is so highly impregnated with lime, that great quantities of calcareous depositions are found in the eddies of all the streams: Here, Irrigation might be practised with wonderful effect; and he has no doubt that excellent crops of oats, barley and rye, might be raised in all the vallies; the land is probably equal to the production of any sort of grain, but the climate seems to be too damp to bring wheat to perfection.

From Mr. Nimmo's general Report on the district of Cunnemara, it appears that this great tract of country contains about 560,000 English, or 350,000 Irish acres: Of this, he estimates,

Arable	-	-	-	-	-	-	-	25,000
Bog	-	-	-	-	-	-	-	120,000
Mountain and upland pasture	-	-	-	-	-	-	-	200,000
Rock, much of it limestone	-	-	-	-	-	-	-	5,000
								<u>350,000</u>

Few tracts in Ireland are less productive than Cunnemara in its present state; yet few, in Mr. Nimmo's opinion, present greater facilities for improvement.

The population he states to amount, at present, to about 30,000; of which one-half is in Cunnemara proper; two-thirds of the remainder in Jar Connaught: Of the Cunnemara population, more than nine-tenths are settled along the sea-shore: The inhabitants of the interior do not amount to 300 families, and those are to be found chiefly along some of the bridleroads that have been made through the country. In Jar Connaught, the population is either on the sea-coast, or on the northern slope of the hills next the limestone country. In Joyce's country, the upland parts are uninhabited. The rental of the whole district he states to be about £. 50,000 per annum; of which the kelp may produce £. 6,000. Various great inlets of the sea penetrate the district, so that no part of it is distant four miles from existing navigation: There are upwards of twenty safe and capacious harbours fit for vessels of any burden; about 25 navigable lakes in the interior, of a mile or more in length, besides hundreds of smaller dimensions: The sea-coast and all those lakes abound with fish. The district with its islands possess no less than 400 miles of sea-shore; on Lough Corrib it has about 50 miles of shore; so that with Lough Mask, &c. there are perhaps as many miles of shore of the sea, or navigable lakes, as there are square miles of surface. There are extensive banks of calcareous sand round the coast in almost every bay; and in the interior there are numerous beds of limestone, nearly all the navigable lakes having some on their banks. The supply of fuel is evidently inexhaustible. There are banks of shell and coral sand on all the coast, but especially in the bays of Kilkerran, Birterbuy, Bunown, Mannin, &c.; this sand is raised by dredging, and by beaching the boat on it at low water. That of Kilkerran, Birterbuy and Mannin, is pure coralline.

On the whole, says Mr. Nimmo, it appears to me that the improvement of this district, so far from being difficult or hopeless, is a thing highly feasible, and if vigorously but steadily pursued, is likely to meet with fewer obstructions and greater ultimate success than perhaps in any other part of Ireland.

The great supply of manure on the coast is the red sea weed, which is cast ashore in considerable abundance, and frequently cut in the deep water by people in boats. Two or three boat loads of about six tons each, are usually applied as manure over an acre of potatoe ground: The usual course being,—1st, Sea weed for potatoes;—2d, Oats or barley;—3d, Natural meadow for four or five years, and then sea weed, &c. as before. The grass is mostly florin.

On the second breaking up, the surface is frequently pared and burnt. This, in a district where most of the soil is only a thin red Bog upon bare granite, cannot but be very destructive; it has produced much naked rock among the cultivated parts.

—(4.)—
FOURTH REPORT
ON THE BOGS
OF IRELAND;
(April 1814.)

The value of the sea manure is abundantly shown by the numerous patches of cultivated ground which occupy the shore from Galway westward, and where the soil must originally have been of the most uninviting description, being nothing but Bog and rock; a vast extent of it is now reclaimed, and seems fitted for crops of any description; even wheat has been tried with success. It is commonly supposed that grain is apt to run to straw without filling the ear, on reclaimed Bogs. This, says Mr. Nimmo, must arise from the want of manure, or improper drainage, as I have seen on various parts of these shores as good barley as on any dry land in the kingdom; and it must be observed, that it is not the defect, but the excess of drainage which is thus injurious; for as Bog parts with its moisture by evaporation more speedily than almost any other soil, unless a proper supply be preserved in the sub-soil towards the latter end of summer, the crop runs the risk of perishing from drought. In this quarter the perpetual moisture of the Atlantic renders such an accident less probable.

The kelp in 1808, sold in Galway at £. 13 per ton; freight thither from the bays, 5s. per ton. At present the price is so low as from £. 3. 10s. to £. 4; so that many of the farmers find it more for their interest to employ the sea weed in agriculture. This disposition, Mr. Nimmo states, is likely to become general in the present state of the markets, and he thinks it deserving of encouragement. The benefit that would accrue to Cunnemara, from the transfer of the manure and labour to the improvement of the land, is perhaps, he says, not rated too high, when we say it would be annually as much as the present rental.

Cunnemara, like every other part of Ireland, furnishes practical illustrations of the advantages to be derived from the reclaiming of Bog land. We learn from Mr. Nimmo, that Mr. O'Flaherty reclaimed a large tract of Bog at Renville, &c. to the extent perhaps of one thousand acres. He removed the cottagers from their old stations and settled them on the Bog; this they reclaimed with potatoes and sea weed, treating it afterwards with the sand of the shore, which contains no calcareous matter; the effect has been very great. Cunnemara is very destitute of wood, a few scrubby patches only being thinly scattered through it; the country, however, says Mr. Nimmo, possesses an extensive stool of timber, for in almost every knole or clift, the oak, birch and hazel appear shooting in abundance, and require only a little care to rise into valuable forests. Several iron furnaces which were erected about a century ago, consumed much of the timber, and copping was afterwards unfortunately neglected. The sheltered vales, navigations and abundant command of water, would afford great advantages in the cultivation of timber. Independent of the extensive stool yet existing, the lakes, rocky ridges, and Bogs, afford great facility for enclosing new plantations, and the means of transport are every where at hand; there is already a good deal of brushwood among them, but valuable coppices and even timber might be raised, since the roots, ramifying through the numerous fissures of the rock, will find nourishment and a fertile soil, which nothing else could beneficially occupy. Mr. Nimmo truly observes, that planting seems the best system for all extensive moors which are far from manure or limestone; it may be thought, he adds, that the western parts of Cunnemara are too much exposed for timber, but independent of the proof to the contrary, which the ancient Bog wood affords, we have timber now living and thriving in these situations; Mr. John D'Arcy, of Killalla, has succeeded well in raising most kinds of timber at Clifton on Ardbear Bay, though immediately exposed to the Atlantic; his nursery there is in good order, and he is extending the plantations. The copses of Ballinaboy, Munga, &c. are also very near the ocean; and the wood of Clonile in Birterbuy Bay, grows down to the water edge.

The survey of Cunnemara confirms Mr. Nimmo in the decided opinion which his experience in other districts had led him to express, as to the perfect practicability of Bog improvement. "I am perfectly convinced," says he, "in the conclusion of his Report, from all that I have seen, that any species of Bog is by tillage and manure capable of being converted into a soil fit for the support of plants of every description, and with due management, perhaps the most fertile that can be submitted to the operations of the farmer: green crops, such as rape, cabbages, and turnips, may be raised with the greatest success on firm Bog, with no other manure than the ashes of the same soil; permanent meadows may be formed on Bog, more productive than on any other soil; timber may be raised, especially firs, larch, spruce, and all the aquatics, on the deep bog, and the plantations are fenced at little expense; and with a due application of manure, every description of white crops may be raised upon Bog, and I know no soil from which they can be extracted without it."

In conclusion of our inquiries, it may naturally be expected that we should express our opinion whether any, and what general measure should be adopted, to further the reclamation of this great extent of land, at present so unprofitable, and which the concurrent testimony of every person, except one, whom we have employed, represents as not merely susceptible of improvement, but as promising to afford a greater profit on the operation than perhaps any other application of agricultural skill and capital.

Various as are the modes of improvement, and the estimate proposed by our different Engineers, we consider that the fair average of their opinions, represent that by an expenditure of from £. 1 to £. 20 per acre, the reclamation would secure to the improver a permanent rent of from 10 to 15 per cent. on the expenditure. Some of them, on whose judgment we place great reliance, are even of opinion that the whole of the capital employed would be returned by the produce of the first crops which effected the improvement. Supposing then the capital employed to be finally lost, still the rent obtained would abundantly compensate for its application; but on the other supposition of the capital itself being repaid, it would follow

follow that the rent would finally become the reward merely of the skill and labour of the improver.

Nor is it on mere theoretical speculation that these premises are rested. Our engineers uniformly adduce the example of hundreds of acres actually improved within their respective districts, to justify their estimates.

It may, perhaps, then be inquired, why all these Bogs have not long since been improved? or it may be asserted, that their present desolation in the midst of so much apparent inducement, is in itself a sufficient proof that such premises must be practically fallacious.

We are convinced, however, that this circumstance may be otherwise accounted for, and that it is not to physical obstacles that the present situation of these wastes is principally to be ascribed.

The arable lands around the extremities of each Bog belong, pretty generally, to a great variety of proprietors; the mearings of whose estates, it is generally admitted, must be contained within the area of the interior Bog, but the precise situation of which is seldom ascertained. The external boundary of the Bog forms a turf bank; the interior is a quagmire, in its present state inapplicable to any other purpose than the affording a very scanty summer pasture to a few wandering cattle, who are turned in to seek for it, at the risk often of being lost. The cultivators who occupy the contiguous farms, have usually annexed to the enjoyment of the lands, a right of turning in their cattle on the part of the Bog adjoining to their respective farms; and when these are tempted by hunger to wander further, reciprocal convenience forbids its being considered as a trespass. These farmers have usually terms of lives or years in their holdings, too short to tempt them, even if possessed of capital and skill, to enter on the permanent improvement of the Bog, while they are yet abundantly sufficient to render such an operation impracticable for the landlord. The landlord has demised to the tenant a vague possession of what he considered of little or no value; the shortness of the tenure obliges the tenant to leave his holding in its unprofitable state; but were the landlord to propose to improve it, the tenant having a present right to prevent him, that right would become valuable just in proportion to the intended exertions of the landlord, and would inevitably be set up by the tenant.

Mr. Edgeworth, in his Report, adduces a very practical instance of the operation of these obstacles. He mentions, that he should himself have made an attempt to improve Bog, could he have obtained in his neighbourhood a large tract of the Bogs which he had surveyed near the Inny, in district No. 7; but the uncertainty of their respective properties, says he, deters the owners of these Bogs from entering into engagements for their improvement. The reasonable dread of litigation prevents proprietors from seeking, through their own exertions, those advantages which they hope to derive from the adventurous spirit of others; it cannot be expected that this obstacle to the improvement of the Irish Bogs, can be removed by any thing short of legislative interposition. It is within the knowledge of a Member of this Board, that Mr. Edgeworth offered to one of those proprietors, a rent hitherto unheard of for Bog land, proposing only a sixty years lease for his own interest; and the proprietor professed himself perfectly satisfied, on the single but impossible condition, of Mr. Edgeworth undertaking to indemnify him against all the law-suits, which it was well foreseen would be the inevitable consequence.

Having thus pointed out what we conceive distinctly to be the main obstacle to the improvement of the Bogs of Ireland, namely, the uncertainty of the boundaries of estates when they pass through extensive Bogs, and the right usually vested in the occupiers of the adjoining farms, we feel it to be rather the province of the Legislature than of our Board, to devise the provisions which can alone remove this impediment.

To facilitate the speeding of Commissions of Perambulation, which might ascertain the boundaries of contiguous estates, would probably be a measure of no difficult accomplishment; but it would require more consideration to ascertain on what terms the landlord could be permitted to resume from his tenant a vested right, however unprofitable its possession.

Should these obstacles be removed, it would further become necessary to enable the proprietors of estates under settlement, to make long leases of Bog lands for the purpose of improvement; the remainder man would be benefited and not injured by such an interference; his property would ultimately receive a prodigious increase of value, and during the term of years it would at least produce to him a reasonable rent; in its present state it produces almost nothing. The Irish Legislature has already in some degree recognized the principle we recommend, for while it has carefully disabled Bishops and ecclesiastical persons from demising the estates of their benefices generally, for a longer term than 21 years, it has by the statute of 12 Geo. I, cap. 12, specifically excepted Bogs and extensive marshes, and enabled them to demise such for terms of sixty years.

It is also obvious, that in the event of future enterprizes, either by individuals or by associated companies, for the drainage and improvement of large tracts of Bog, it will be expedient that the Legislature should secure by enactment, a free passage under proper regulations, through the adjacent estate, so far as may be requisite for carrying on and completing the main lines of drainage and communication; as otherwise the interested opposition of a neighbouring proprietor might impede and render of no effect the efforts of the improver. Each case, however, will require its peculiar remedy, and we therefore can only advert thus generally to the subject.

Should the Legislature not consider its interference as advisable, one good at least may be expected to follow from these facts being submitted for consideration; that landlords may become more cautious how they enter for the future into such engagements.

—(4.)—
FOURTH REPORT
ON THE BOGS
OF IRELAND;
(April 1814.)

Our Engineers, under the strong impressions of the practicability and profit of these improvements, are naturally anxious to see them immediately undertaken. Mr. Edgeworth submits, that some public experiment should be tried, that might demonstrate to the nation, either that the scheme of improving the Bogs of Ireland is practicable or hopeless; and he expresses his opinion, that nothing but such a plain and indisputable proof of the practicability and profit of reclaiming Bog, is wanting to turn the attention of individuals and of large companies to this mode of enhancing private fortunes, and of increasing national wealth. Mr. Nimmo expresses himself thus on the same subject,—“Upon the whole, I am so perfectly convinced of the practicability of converting the whole of the Bogs I have surveyed, into arable land, and that at an expense which need hardly ever exceed the gross value of one year’s crop produced from them, that I declare myself willing, for a reasonable consideration, to undertake the drainage of any given piece of considerable extent, and the formation of its roads, for the sum of one guinea per acre, which is little more than seven years purchase of the rent it would then afford.”

An absent Member of our Board, under the influence of similar conviction, has expressed to us his strong desire, that in this our final Report, we should recommend to the Legislature the establishment of a new Board, with the necessary funds and powers for making an experiment, upon a grand scale, in the reclamation of some large Bog in the vicinity of the Capital; and further, to enable them to lend money to persons willing to undertake the improvement of their Bogs, upon receiving proper security for the repayment of the principal by instalments without interest; a principle which has already received the sanction of the Legislature, for the erection of Churches and Glebe Houses, for the formation of Roads in the Highlands, and for the improving the great lines of Mail Road communications in this country. But however specious such a plan may appear, when stated generally; yet, on the contemplation of the difficulties connected with its practical detail, we cannot bring ourselves to agree with his proposal as thus stated. The expenses of the preliminary experiment, if conducted by such a Board, might, we apprehend, afford an example highly discouraging, and no less fallacious, if considered as a measure of the necessary expenses attendant on such a plan when superintended by the vigilance of private adventure.

And if the establishment of a Board, for the sole purpose of forwarding, by loans of the public money, the general drainage of the Bogs (thus supplying the defect of private capital, which is so much to be lamented in this part of the United Kingdom,) should be deemed worthy the attention of the Legislature, it must not be forgotten, that great difficulties would present themselves in selecting, amongst the numerous applications preferred to the Board for the loan of money repayable without interest, the proper instances in which to accept them; that the task of ascertaining that the money when lent was really applied to the professed object, would be no less embarrassing; and that finally, the Board might become involved in endless law suits, in endeavouring to enforce the recovery of the sums advanced, where the adventurers had happened to be unsuccessful.

Influenced by these considerations, we are disposed to confine our recommendations to the legislative removal of those peculiar obstacles to the improvement of these great wastes, already pointed out by us; and we feel a confident assurance, that when peace shall have established the opinion of our British fellow-subjects, with respect to the security of property in this part of the United Kingdom, so obvious a field for the employment of British capital as has been pointed out in these Reports, cannot be overlooked. Nor is it to be objected, that the improvement of such extensive tracts would require a capital of enormous magnitude to effect it; if there is any truth in the opinions which have been so generally advanced to us by those engineers, in whom we place our chief confidence, the very process of reclamation would reproduce to the farmer, in the first crops, the money which he had expended, and which would thus successively become re-applicable to new operations.

HAVING now submitted to Your Honourable House, all the Reports which we have received from our Engineers, we think it may be advisable here, briefly to recapitulate the extent and application of their numerous inquiries.

	Containing, of Bog, English Acres,
1.—From Mr. RICHARD GRIFFITH, jun. on the Eastern extremity of the Bog of <i>Allen</i> , in the county of Kildare -	36,430
2.—From Mr. RICHARD GRIFFITH, jun. on the District of the River <i>Barrow</i> , in the county of Kildare - - -	41,075
3.—From Mr. JONES; on the District of the River <i>Boyne</i> , in the counties of Meath and Westmeath - - -	42,370
4.—From Mr. LONGFIELD; on the District of the River <i>Brusna</i> , in the King’s county - - -	44,594
5.—From Mr. TOWNSHEND; on the District of the River <i>Shannon</i> , in the counties of Westmeath, Longford, and the King’s county - - -	34,500
6.—From Mr. EDGEWORTH; on the District of the River <i>Inny</i> and <i>Loughree</i> , in the counties of Longford and Westmeath,	34,569
7.—From Mr. LONGFIELD; on the District of <i>Lough Gara</i> , in the counties of Roscommon, Sligo, and Mayo - - -	83,689
8.—From Mr. AHER; on a District lying between <i>Roscrea</i> and <i>Killenaull</i> , situated in the counties of Tipperary, Kilkenny, and the Queen’s county - - -	36,025
9.—From Mr. AHER; on a District lying to the Westward of <i>Maryborough</i> , in the Queen’s county - - -	14,754

	Containing, of Bog, English Acres,
10.—From Mr. COCKBURNE; on a District forming the <i>Western</i> extremity of the county of <i>Clare</i> - - - - -	22,340
11.—From Mr. BRASSINGTON; on a small District on the banks of the River <i>Barrow</i> , in the counties of <i>Kildare</i> and the <i>King's county</i> - - - - -	7,459
12.—From Mr. JONES; on the District of <i>Lough Corrib</i> , in the counties of <i>Galway</i> and <i>Mayo</i> - - - - -	83,724
13, 14, 15.—Three Reports from Mr. BALD; on three Districts in the county of <i>Mayo</i> - - - - -	161,962
16.—From Mr. TOWNSHEND; on a great District surrounding <i>Lough Neagh</i> , and extending to the mouth of the River <i>Bann</i> ; situate in the counties of <i>Antrim</i> , <i>Down</i> , <i>Armagh</i> , <i>Tyrone</i> , and <i>Londonderry</i> - - - - -	64,855
Exclusive of 10,673 acres of Land inundated by the winter level of the lake.	
17.—From Mr. NIMMO; on the District of <i>Iveragh</i> , in the county of <i>Kerry</i> - - - - -	43,567
18.—From Mr. NIMMO; on the District of the River <i>Kenmare</i> , in the county of <i>Kerry</i> - - - - -	14,605
19.—From Mr. NIMMO; on the District of the Rivers <i>Laune</i> and <i>Lower Maine</i> , in the county of <i>Kerry</i> - - - - -	17,990
20.—From Mr. NIMMO; on the District of the <i>Upper Maine</i> , in the county of <i>Kerry</i> - - - - -	8,566
21.—From Mr. NIMMO; on the District of <i>Slieve Laughar</i> , in the counties of <i>Cork</i> and <i>Kerry</i> - - - - -	32,902
22.—From Mr. NIMMO; on the District of the River <i>Cashen</i> , in the North of <i>Kerry</i> - - - - -	31,514
23.—From Mr. EDGEWORTH; on a second District contiguous to <i>Loughree</i> , in the counties of <i>Longford</i> , <i>Leitrim</i> , and <i>Roscommon</i> - - - - -	26,630
24.—From Mr. R. GRIFFITH, jun. on the Southern Extremity of the River <i>Suck</i> , in the counties of <i>Galway</i> and <i>Roscommon</i> , - - - - -	76,848
25.—From Mr. R. GRIFFITH, jun. on the Northern Extremity of the same District - - - - -	52,390
	1,013,358;—

Making a total of 1,013,358 English acres of Bog, minutely surveyed and levelled; forming the subjects of 25 Reports, and embracing the opinions of ten different Gentlemen, who have devoted, as appears sufficiently from their Reports, no small time and labour to the investigation.

In addition to these we have, as already stated, received three Reports, not professing to enter into the same detail, upon the three Mountain Districts of *Wicklow*, *Erris*, and *Cunnemara*.

Of these,

The <i>Wicklow</i> District appears to contain, of common red Bog,	97,000
The District of <i>Erris</i> - - - - -	170,000
The District of <i>Cunnemara</i> - - - - -	120,000

Exclusive of the Peat Soil, which forms the general covering of the Mountains within these three Districts, and much of which appears very reclaimable for pasture, by the simple process of laying out intercepting drains.

Of this Mountain Soil there appears to be,

In the <i>Erris</i> District - - - - -	155,500
And in <i>Cunnemara</i> , about - - - - -	200,000

No particular return is made of the quantity in the District of county of *Wicklow*, but it is, no doubt, very considerable.

Mr. Nimmo further informs us, that the Mountains of *Slieve Laughar*, *Slieve Mash*, and *Corgaginny*, containing, according to him - - - - -

500,000

There are besides, in the counties of *Donegal*, *Tyrone*, and *Fermanagh*, very extensive tracts of Mountain similarly circumstanced. These we have not been able to make the subjects of our Surveys, nor do we think that there is much reason to regret the omission, being persuaded that their proprietors, when disposed to undertake their improvement, may find, in the Reports which we have already submitted to Your House, every information to be obtained upon the subjects. Judging, however, from the maps of this North-western extremity of Ireland, and comparing them with the extent of the other Mountain Districts whose contents we have ascertained, we are disposed to believe that they cannot contain, of Peat Soil forming the covering of these mountains, less than 400,000 English Acres.

In forming our opinion, as to the total aggregate amount of the Bogs in Ireland, it is very necessary to advert to the Bogs of less content than 500 acres; of these it is difficult

or

—(4.)—
FOURTH REPORT
ON THE BOGS
OF IRELAND;
(April 1814.)

or impossible to form an estimate with any degree of accuracy; we are not however, altogether without data. Examining Mr. Larkin's minute and excellent map of the county of Cavan, in his presence, we perceived it to contain about 90 Bogs, no one of which extended to 500 acres, and yet containing no less than 17,600 English acres in their collective amount.

This county comprises about 1-40th of Ireland; there are, however, few or perhaps no other parts of the Island, in which these small Bogs are so much interspersed. On the whole, we cannot suppose the other parts of Ireland contain less than ten times as great an extent of these lesser Bogs, as the single county of Cavan.

From all the above data, we can confidently pronounce, that the extent of Peat Soil in Ireland exceeds two millions eight hundred and thirty thousand English acres, of which we have shewn at least 1,576,000 to consist of flat red Bog, all of which according to the opinions above detailed, might be converted to the general purposes of agriculture; the remaining 1,255,000 acres form the covering of Mountains, of which a very large proportion might be improved at a small expense, for pasture, or still more beneficially applied to the purposes of plantation; we wish indeed it were possible for our Reports to fix the attention of their proprietors upon this subject, so connected with the interests of the British Empire.

We cannot dismiss this part of the subject, without again adverting to a prejudice not less extensive than that of the irreclaimability of Bog, and certainly still more destitute of foundation; we mean, the apprehension generally entertained, that in the event of the improvement of the Bogs, the country would be left without a sufficient supply of Fuel. It seems not to be generally understood, that if the Bogs of Ireland were reclaimed, we should derive not merely the advantage of cultivating their surface, but that at the same time the power of applying them, wherever necessary, for fuel, would be augmented some hundred or rather some thousand fold. Fuel can at present be obtained only from the edges of these Bogs; the excessive wetness of the interior, rendering it, in its present state, wholly unavailable for that purpose, but if once drained, fuel might be obtained from every part of them: And it is a great mistake to suppose, that the drainage of a Bog would impair its quality as fuel; on the contrary, it would operate as the greatest possible improvement of it, and that not merely at the time it was effected, but at all future periods, and in a degree progressively increasing.

In the prosecution of these inquiries, we have effected, on the great scale of 4 inches to the mile, the most accurate Surveys which have ever been made, of a very large portion of this Island. On a perusal of the Act under which we have been appointed, we find nothing to direct us with respect to the final application of these documents, and we have accordingly exercised our discretion in presenting them to the Dublin Society, who have so liberally accommodated us with the use of their house and establishment, for the purposes of an inquiry. These maps, accompanied by the original Reports of the Engineers, will form an appropriate appendage to an Institution, which has ever made the agricultural improvement of Ireland one of its principal objects, and in no other place would their preservation be more certain, or public access to them so easy.

We regret that the trigonometrical connection of these Surveys, which we formerly proposed, has been found, for the present, to exceed our powers, owing to the necessity under which we found ourselves of employing the gentlemen to whom we wished to entrust it, in completing the other Surveys within the time allotted for our existence as a Board. This is an object, however, which at any future day can without difficulty be resumed.

We subjoin, in the Appendix, No. 1 & 2, an Account, continued under the same Headings as formerly directed by Your Honourable House, for the period which has elapsed since the last Account which we submitted.

We regret, that an estimate of the sum has proved erroneous. The nature of our inquiries has been such, as to preclude the possibility of foreseeing, with any tolerable precision, what expense would be required. On the winding up of our Accounts, we are deficient in the sum of £.452. 12 s. which we humbly hope Your Honourable House will be pleased to enable us to discharge. We can indulge the gratifying reflection, that, during a period of upwards of four years, in which our inquiries have been continued, the entire expenses to the Public of the establishment of our Board, have been confined to the mere salaries of our Secretary and one clerk; during the first 15 months of this period, we allowed to the former £.200, and to the latter 50 guineas per annum. The great and unforeseen accumulation of Correspondence and Accounts which then ensued, and the increasing responsibility which fell upon our officers, determined us to augment their salaries at that time, the former to £.300, and the latter to £.100 per annum. During the last half year, their business has been inconsiderable, and we have thought it right, with their consents, to retain their Services, but to discontinue their salaries during that time altogether.

J. LESLIE FOSTER. (L. S.)
WILLIAM GORE. (L. S.)
HENRY HAMILTON. (L. S.)
HANS BLACKWOOD. (L. S.)

April 1814.

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SECTION OF A TURF BANK IN TIMAHOE BOG.

In which the several variations in the compositon between the top & the bottom are pointed out.

N ^o	Depth in feet		
1	2		<i>Dark reddish Brown, mafs compact, no fibres of Mofs visible, surface of Bog decomposed by the Atmosphere</i>
2	3		<i>Light reddish Brown, fibres of Mofs very perfect</i>
3	5		<i>Pale yellowish Brown, fibres of Mofs very perceptible</i>
4	8½		<i>Deep reddish Brown, fibres of Mofs perceptible</i>
5	3		<i>Blackish Brown, fibres of Mofs scarcely perceptible, contains numerous twigs & small branches of Birch, Alder & Fir</i>
6	3		<i>Dull yellowish Brown, fibres not visible, contains much empyreumatic Oil, mafs compact</i>
7	10		<i>Blackish Brown, mafs compact, fibres not visible, contains much empyreu- -matic Oil</i>
8	4		<i>Black mafs very compact, has a strong resemblance to Pitch or Coal, fracture</i>

(5.)

EXTRACTS FROM THE APPENDIXES.

EXTRACTS FROM THE APPENDIX TO THE FIRST REPORT.

REP. I.—*Mr. Griffith*, on the eastern part of the bog of Allen; his general observations; letter from the bishop of Kildare; plans for drains, &c.—with one Plate, Section and analysis of part of the Timahoe bog.

Mr. R. GRIFFITH, on Part of the Bog of Allen.

IN answer to an assertion made by some persons, that a Bog deprived of water is a *caput mortuum*, on which no plant will vegetate, either spontaneously, or by any alteration in the composition of its surface that can be effected; it may be observed, that although Bog when first drained appears to have lost the power of supporting aquatic plants, without a capability of supplying food for the vegetation of plants of a different and more useful nature; still, if we have patience till the Bog-moss*, &c. which composes the upper surface of the Bog, shall have subsided, and by the near approach of their mossy fibres (which when alive are kept asunder by water) and exposure to the atmosphere, shall become (to a certain degree) putrid, it will be found that various grasses of good quality, and even white clover, will vegetate spontaneously on its surface.

Drained Bog supposed by some persons to be a *caput mortuum*.

But it is not to be supposed that an active people will thus suffer Nature, unassisted, slowly to attain a desirable alteration in the upper surface of drained Bogs; they will naturally join hand in hand with her, and by the simple process of digging or ploughing up the surface of the drained Bog, and by gathering it into heaps, and (in dry weather) setting fire to them (having previously mixed a portion of clay amongst the heaps, which is always to be found in inexhaustible quantities beneath the Bog) accomplish in two years, what Nature, unassisted, might have attained (less perfectly) in ten.

The process of reclaiming Bogs and spreading Clay on its surface, and afterwards burning the Clay and surface of the Bog together.

Clay is universally found beneath the Bog.

This species of manure, which by long experience, both in this country and in Scotland, has been ascertained to be the most efficacious in altering the properties of pure peat, is the Ashes of Peat, taken from the most solid part of the Bog nearest the bottom. The composition of these Ashes is usually found to be burnt clay, containing a large proportion of oxyd of iron, and a small proportion of charcoal.

The Ashes of Peat dug from the bottom of the Bog, have been found very efficacious in altering the properties of pure Peat.

These Ashes are composed of Clay and Charcoal.

From this analysis we may be led, with tolerable certainty, to draw the conclusion, that Clay taken from the bottom of the Bog, which must be similar to that contained in the Peat immediately above it, and mixed and burned with the Moss that forms the upper part of the Bog, would (by increasing the quantity of the Clay) have more effect in the decomposition of Peat, so as to render it capable of affording nourishment to plants of almost every description, than the Red Ashes produced by the under stratum of the Bog alone, which, as already stated, has been universally approved of.

It is supposed, that Clay taken from the bottom of the Bog, and burned with the surface, would yield Ashes equal if not superior to Red Ashes.

Mr. Nasmith, of Hamilton, in his admirable Essay on the Properties and Uses of Peat, states, that cohesive earth, which has suffered torrefaction (such as brick dust), is a most powerful solvent of peat; and in this he is borne out by numerous experiments made by himself, though rather on too small a scale.

Mr. Nasmith found brick-dust a powerful solvent for peat.

The next manure in value to ashes is Lime, which, however, should be used but sparingly in the first instance; but it is admirable in producing sweet herbage in surface dressing on reclaimed Bog; and I mention this, the rather as I have lately heard persons (who might have been better informed) speak of Lime as being greatly superior to *all* other manures in reclaiming Bog.

Lime should be used sparingly in the first instance; but it is admirable in producing sweet herbage in surface dressing on reclaimed Bog.

Improvements already Effected.

The only attempt of any consequence hitherto made, towards reclaiming or cultivating part of the Bog in this division of the District, is on the north-west side of Clane Bog, called Betaghstown †. Single patches (seldom exceeding ten or twelve acres) may in other places be

Patches of reclaimed Bog, seldom exceeding 10 or 12 Irish acres, are observable along the edges of most of the Bogs.

* *Sphagnum Palustre*.—The pulp of the Bog, as has been already observed, is composed of varieties of this Moss. To exemplify, as far as possible, the various stages of decomposition which the Moss has undergone between the top and bottom of a deep Bog, I have added at the end of this Report a Section, with a description and analysis of every variation in the colour and composition of the Moss, from the top to the bottom of a Bog of 38½ feet in depth.

† The Bishop of Kildare, under whose direction the improvements on the Bog of Betaghstown are carried on, has

done me the honour of communicating to me his ideas on the Reclamation of Bog, in the following interesting Letter; in which the mode of proceeding he has adopted will be found most correctly and fully detailed:—

“Glasnevin House, 1st June 1810.

“Dear Sir,

“THE Bog of Betaghstown lies a little elevated above a Morass, which had formerly been a Lake. In 1806, the levels of an old Drain, by which this change appears to have been effected, being judged capable of correction, were

Letter from the Bishop of Kildare, describing his improvements in Betaghstown Bog.

(5.)

EXTRACTS

from the Appendixes to
preceding Reports.

The usual process of reclamation is, spreading Clay on the surface of the drained Bog, and afterwards burning the surface and Clay together.

The first Crop is Rape, which yields usually 10 barrels of seed.

Second crop, Oats; and the third, with some manure, Potatoes.

be observed in a state of semi-reclamation along the edges of most of the Bogs. The mode of proceeding usually adopted in reclaiming the Bog, is as follows, viz. The part intended to be cultivated being drained, or partially drained (the latter most generally, on which account the crops often fail) the surface is ploughed, or dug up, and gathered into heaps, amongst which clay, or limestone gravel, is usually mixed; when sufficiently dry, the heaps are set on fire, which burn slowly, and leave usually a considerable quantity of red ashes, which are spread on the surface of the Bog; the Bog is afterwards ploughed or dug a second time, but deeper than the first; these operations being performed, the field is ready for sowing. The first crop is Rape, which in dry years is usually productive, yielding about 10 barrels of seed per acre, and sometimes more; the next crop is generally Oats, and afterwards (with a portion of manure) Potatoes, as it suits the convenience or fancy of the farmer; no regular succession of crops having as yet been generally adopted.

ESTIMATE of the Expense of Draining the several Bogs contained in the Eastern Division of District, No. 1.

Preliminary Observations to the Estimate:

IN an undertaking so novel as that of a general Draining of the Bogs, in which no considerable degree of experience has yet been attained by any one, I felt considerable difficulty in appreciating the value and quantity of work to be performed upon any given Section through the Bogs. I have therefore deemed it my duty to make very minute inquiry into the progress of the Drainage of the several Bogs through which the Royal and Grand Canals have been executed, as well in respect to the prices of original, secondary, and final cutting of the Drains, as in respect to the probable quantity of increased cutting that may be produced by the rising and collapsing of the Bog in the progress of its drainage.

The fallacy of Estimates is (perhaps too justly) become proverbial, and the Commissioners would have had but little reason to confide in an Estimate made by an Engineer, unless he had (as I have endeavoured to do) made himself fully acquainted with the general progress and detail of all the works of this nature executed in Ireland.

In

were also further deepened; and thus the lowest Pits in the Morass, a considerable portion of the Bog, together with some adjoining Fields (of which the annual produce was both scanty and precarious) were commanded and rendered level free.—The whole area, indeed, floated on water, having a bottom composed of marly Clay and Limestone-gravel, a substance of great value, and peculiar to Ireland. In 1807, four interior parallel Drains, fifteen feet each in width, were cut towards the higher edge of the Bog through the Morass, which proved to be eight feet in its least, and twenty-two feet in its greatest depth.

“At right angles, covering the heads of these, and within a few yards of the Bog, a Catch-water Drain was constructed of twenty feet in width, and in depth varying from sixteen to twenty-two feet. Twenty-six plantation acres of no value, were thus converted into solid ground, and by its Drains at top, bottom, and middle, enclosed in parallelograms, all having an equal and free drainage to the main, or commanding outfall.

“In the commencement of this undertaking, serious difficulties were suggested by the neighbours, many of whom were persons of sound judgment and competent skill. The most important of these seemed to consist in the probability, that a deep mass of spongy and almost fluid matter would collapse, choke up, and endanger the lives of the persons employed in cutting the Drains; it was therefore determined to commence and to finish each reach, down to the gravelly bottom, on the same day; because it was imagined, that the bottom, being hard and level free, would furnish a seat on which the sponge would compress as the water should subside. Instead of cutting the sides of these Drains in a sloping shape, or batter, they were, at convenient points of descent, formed into benches or steps, on either side the projecting base of each, supporting the perpendicular pressure of that above it. In all this we were successful, and the operation had an immediate advantage.—Its first effect was, to render perfect the former defective Drainage, to give solidity to the fluid Morass, and to reduce the height of the Bog by withdrawing a portion of its water. No disaster has since befallen the work; the surface has continued to sink; where the depth was twenty-two feet it is now 8 or 9, and the Catch-water Drain, without collapsing, has by pressure reduced its former surface width to seven or eight, leaving the side steps or benches scarcely perceptible; and instead of a Water way, as at first, three feet, there is only a bottom run of 12 to 16 inches. In 1808, the Morass was judged solid enough for the plough; but to avoid any danger of sinking, the legs of the horses were enveloped with hay-bands to increase their volume.

“It is here proper to state, that the land acquired, or relieved from the superabundant moisture by this process, was, in the whole, fifty-five Irish, or eighty-nine English statute acres; twenty acres, the driest of these, were, in the winter

of 1808, well covered with the marly Limestone-gravel already mentioned; and in 1809, together with 16 acres of the former Morass, ploughed, heaped, and burned, with ample success, sown with Rape (otherwise called Coleseed) on which were profitably lodged and fed a considerable number of sheep, in the last winter and spring, in the manner of the Isle of Ely and Lincolnshire farmers; and now there are thirty-three acres of Oats, having the most promising appearance.

“The action of fire on the Morass was satisfactory and complete; but it will be proper, in the course of a few years, to dress it with Limestone-gravel, and to renew it by burning; for it is to be observed, that the gravelled portion of ground, which had formerly been imperfectly improved, had become of very small value: it had been even gravelled at some remote period, a circumstance which was disclosed by the plough; but when heaped and burned, the old and new Limestone-gravel was converted into Quick Lime, blended in the spreading with a renovated soil, and slacked by the weather.

“As we have hitherto had no succession of crops, I cannot give an answer to that point of your inquiry; but it is very much in my thoughts, that all the lands thus acquired from a former state of worthlessness, or improved to a great value, may henceforward be subjected to any reasonable course of husbandry.

“According to our present intentions, they will be continued in an alternation of Green feeding and Oaten crops, with the second division of this acquisition to be treated during the present season in the same manner.

“It has already, without doubt, appeared to you, that the works begun are merely bases to further lines of Drainage, operating on the greater Bog, which will be gradually executed, as the pecuniary circumstances of the place, or any private assistance, may furnish the means.

“In conclusion, therefore, it may generally be stated, that some portion will, according to a regulated succession, be laid down with Grass. That the Straw and Hay obtained from this part of the farm, will be expended for the benefit of the old and worn soils of uplands equally, belonging to Hewetson's Institution for Agriculture and Education; and at stated periods, and in regular progression, these low grounds will be ploughed, heaped, and burned, till by this treatment, and by time, they will compress to the present substratum, which it will be the object of future cultivation to blend and mix in tillage with the vegetable surface that may then be remaining.

“I have the honour to be,

“Dear Sir,

“Your obedient and faithful Servant,
“CHARLES KILDARE.”

Richard Griffith, jun, Esq. &c. &c.

In order to avoid the possibility of the expense of the execution of this work exceeding the Estimate, I have superadded an allowance of 15 per cent. for contingencies, together with 5 per cent. for the salaries of officers during the progress of the work.

In order to afford the fullest satisfaction in my power to the Commissioners, of the principle upon which the annexed Estimate is formed, I have given the quantity of yards in the running perch of the work to be executed in the different Drains according to the Sections, together with the rates per yard and per perch, at which I conceive the work may be finally executed; in which prices or rates I have made allowance for second and third sinking and widening in the Bogs; and having made the allowance in the price, I have not superadded the increased work in those secondary and final operations.

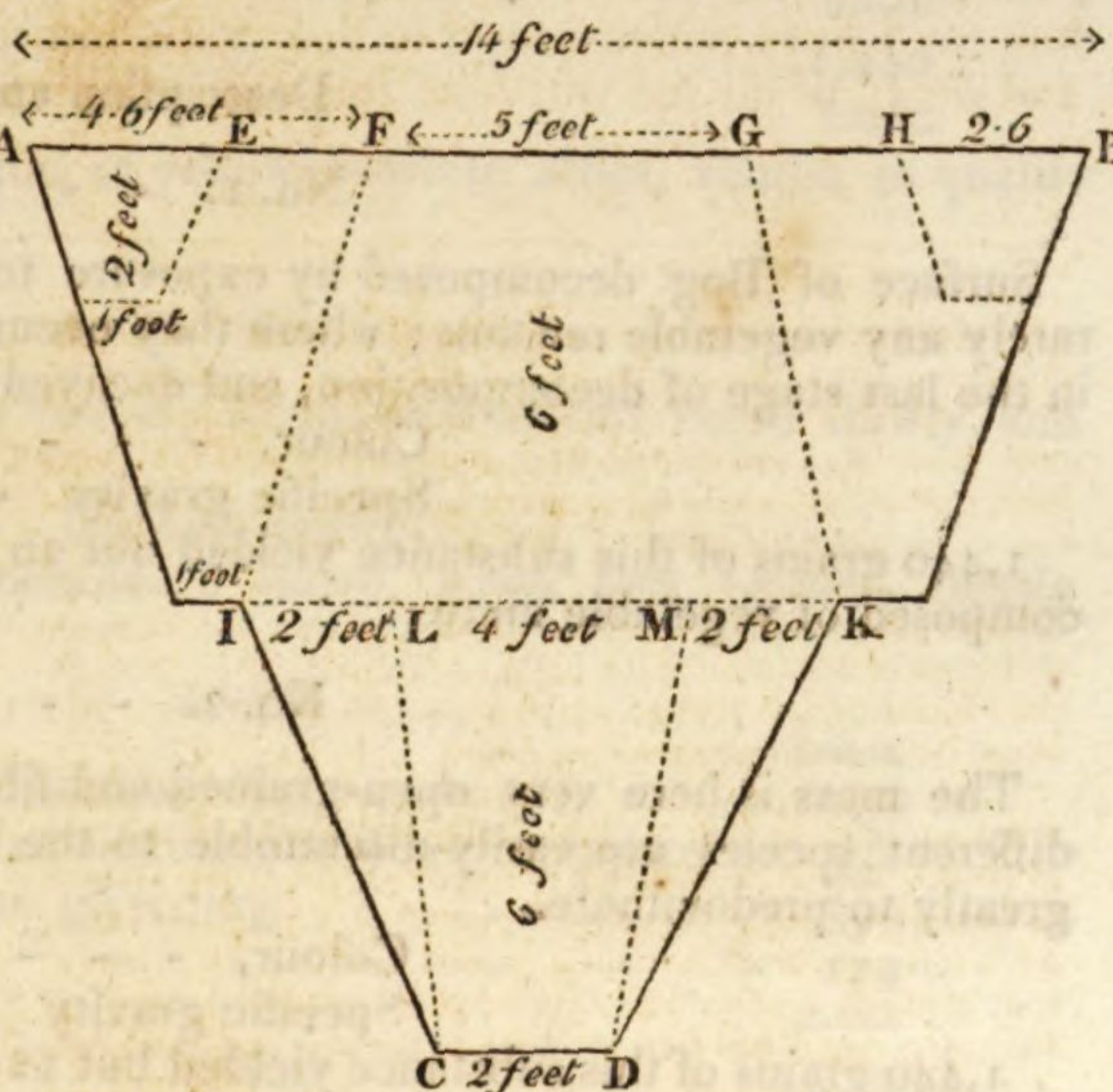
The second and third operations above alluded to are mostly confined to the minor Drains, as the above main Drains are in general laid out in the beds of rivers and streams running through the Bog, where, in most instances, little Bog and some gravel is only to be removed, and the courses of the rivers or streams straitened, and their beds widened and deepened.

As it will probably be supposed by many persons, that 2 feet, which is the whole breadth that I have allowed for the bottom of the proposed main Drains, will not be found sufficient; I think it necessary to mention, that my reason for determining on that breadth of bottom is, that it has been found by experience in the Bogs passed through by the Grand Canal, that where there was any fall, deep Drains with narrow bottoms were kept clean at bottom by the running water; but that the contrary was the case where their bottoms were made broad, as the same quantity of water being thinly spread over the bottom in the latter instance, was not sufficient to carry off the peaty particles it contained, but deposited them on the bottom of the drain, which, on this account, required frequent scourings.

Plan upon which Main Drains are estimated :

The mode of cutting main Drains in very wet Bogs, that I should recommend, is somewhat similar to that originally (proposed) by Mr. Jessop, and carried into effect by Mr. Killaly in draining the deep and wet Bogs in the line of the Grand Canal between Tullamore and the River Shannon.

Suppose the figure A B C D to be the Section of a main Drain when finished; the mode of proceeding that I should recommend, would be; first, that the small Drains A E and H B should be sunk at the edges the whole length of the main Drain. These Drains will have considerable effect in consolidating the Bog, immediately on either side, so as to enable the workmen to return in a few weeks to cut the Drains A F and G B; when these shall be finished, there will remain in the center the core F G K I, which will have two beneficial effects; first, it will effectually prevent the bottom from rising, and the sides from collapsing; and secondly, by suffering the core to remain some months, it will lose so much of its water as to reduce its weight to less than one-half, and in that proportion diminish the expense of its final removal. When the core F G K I shall be removed, the Drain L M C D should be sunk. The Bog stuff may in the first instance be thrown on the benches I L and M K, and from thence cast to the surface: those benches, on the finishing of the work, will be removed.



Cross Section of a main Drain. Process of execution.

Whoever has observed the process of draining Bogs, will be satisfied that it can only be effected by a slow and gradual operation; and when the works are of considerable extent, neither labour nor time will be lost by the mode above suggested, as the labourers will find constant employment by a regular rotation in their operations as the work proceeds.

Expense of the different classes of Drains, abstracted from the Estimate:

In the present early progress of the inquiry into the important subject of Draining the Bogs, it is not possible to conjecture to what degree it may be deemed expedient to extend improvement, as it is probable that the decision in this point will depend on the amount of the expense to be incurred in effecting the different degrees of drainage.

I have, in order to place this matter in as clear light as possible, made three abstracts from the General Estimate, in which I have divided the expense into three several stages of improvement, each including its portion of Incidents and Superintendence, by which the Commissioners will see at one view,—

1st. The expense of executing the main Drains, including the deepening of the Rivers, without which no effectual main Drain can be made; which amounts in this division of the District, containing 22,490 Irish acres, or 36,430 English acres, to the sum of £. 27,749. 10s. 4d.

(5.)

EXTRACTS

From the Appendixes to
preceding Reports.

Rep. I. Mr. Griffith.

2d. The expense of executing the main Drains, as a base with the addition of minor Drains, amounting to the sum of £. 49,268. 9s. 4d.

And, lastly, the whole expense of the operations, which I deem necessary for completely draining this division of the District, including main, minor, and cross Drains, amounting to the sum of £. 70,014. 7s. 3d.

Description of the Section :

The foregoing Section is an exact representation of a Turf Bank on the southern edge of Timahoe Bog.

The surface of the Bog has been partially drained for about 20 perches into the interior, which has occasioned the upper, and most porous part, to subside 3 feet, the fibres of moss having lost their watery support, and not being sufficiently strong in themselves to retain their former elevation. The annual growth of moss on this Bog being prevented by the absence of water, it may be considered as dead.

* p. 157 ante.

In the Report, page 30 *, I have stated, that in drained Bogs, when the Bog-mosses, &c. which compose the upper surface shall have subsided, and by the near approach of their mossy fibres (which when alive are kept asunder by water) and their exposure to the atmosphere shall become (to a certain degree) putrid, it will be found that various grasses of good quality, and even white clover, will vegetate spontaneously on its surface.

The Bog, of which the Section is the face, has now been superficially drained for three years, and the effect above described has taken place to a certain degree, as the common meadow, the Tivrin, or jointed grass, and white clover, are now growing on its surface, though sparingly; and the surface of the Bog has been so far acted upon by the atmosphere as to have totally lost the texture of the moss, and to have assumed a close-grained earthy appearance; whilst in the bed immediately below it, the mossy fibres are so perfect, as to render the different species perfectly distinguishable to the botanist, as may be seen by the specimens which I now lay before the Commissioners.

Description and Analysis :

No. 1. - - 2 feet thick.

Surface of Bog decomposed by exposure to the atmosphere: mass compact; contains rarely any vegetable remains; where they occur they are chiefly composed of fibres of moss in the last stage of decomposition, and decayed branches of heath.

Colour, - - - reddish brown :

Specific gravity - ,895.

1,440 grains of this substance yielded but 20 grains of white ashes, which are found to be composed of vegetable matter.

No. 2. - - 3 feet thick.

The mass is here very open-grained and fibrous; the moss is usually so perfect, that the different species are easily discernible to the botanist: the sphagnum palustre is observed greatly to predominate.

Colour, - - - light reddish-brown :

Specific gravity - ,356.

1,440 grains of this substance yielded but 12 of white ashes, of similar composition to No. 1.

No. 3. - - 5 feet thick.

Mass open-grained and fibrous; varieties of moss visible, but not so perfect as in No. 2: used as turf, but burns badly, on account of the openness of its texture, and its containing no empyreumatic oil.

Colour, - - - pale yellowish-brown :

Specific gravity - ,408.

1,440 grains of the dried peat yielded but 11 grains of white ashes, of similar composition to the foregoing.

No. 4. - - 8½ feet thick.

Mass tolerably compact, but still fibrous; when used as turf, it burns tolerably well.

Colour, - - - deep reddish-brown :

Specific gravity - ,871.

1,440 grains of the dried peat yielded 12 grains of yellowish white ashes, composed of vegetable matter, with a tinge of oxyd of iron.

No. 5. - - 3 feet thick.

Mass compact; fibres of moss rarely discernible*; numerous twigs, and small branches of birch, alder, and fir-trees, are observable amongst the peat in this part of the Turf Bank. Upon near inspection it was found, that all the branches and twigs were quite hollow; the wood

* Branches are not found contained in the body of the Bog generally, and even at the edges not universally.

wood being decayed had disappeared, leaving the bark perfect. This division of the Turf Bank, when used as turf, burns pleasantly, but quickly.

Colour, - - - blackish-brown:
Specific gravity - 1,030.

	Grains.
Analysis.—1,440 grains yielded, of volatile empyreumatic oil - - -	140
Of water, containing a small portion of oil that could not be separated - - -	834
Light porous charcoal - - -	298
Carbonated hydrogen gas, which burned with a clear bluish white light, equal, if not superior, to the coal gas - - -	168
	1,440

500 grains of this charcoal yielded 15 grains of light yellowish-white ashes, composed of vegetable matter, and a slight tinge of oxyd of iron.

No. 6. - - 3 feet thick.

Mass compact; contains no vegetable remains; when used as turf burns swiftly, and with a bright flame; it is usually denominated greasy turf, from its inflaming quickly like grease,

Colour, - - - dull yellowish-brown:
Specific gravity - ,694.

	Grains.
1,440 grains yielded, of volatile empyreumatic oil - - -	180
Water, containing a small portion of oil that could not be separated - - -	816
Light porous charcoal, which, when broken, exhibited a faintly shining lustre - - -	327
Gaseous product, which, when ignited, burned with a bluish white light, similar to No. 5 - - -	117
	1,440

500 grains of this charcoal yielded 16 grains of yellowish-white ashes, similar in quality to No. 5.

No. 7. - - 10 feet thick.

Mass very compact; no vegetable remains visible; when used as turf burns slowly, and with an unpleasant smell.

Colour, - - - blackish-brown.

Fracture earthy, with a tendency to conchoidal; lustre, when first broken, faintly glimmering.

Specific gravity - - 1,057.

	Grains.
1,440 grains yielded, of volatile empyreumatic oil - - -	138
Of water, containing a minute portion of oil that could not be separated - - -	538
A very compact charcoal, internal lustre glisening - - -	590
Gaseous product - - -	174
	1,440

500 grains of this charcoal yielded of deep reddish-brown ashes 50 grains, which are chiefly composed of oxyd of iron.

No. 8. - - 4 feet thick.

Mass very compact; contains no vegetable remains; is seldom used as turf, owing to the unpleasant smell it gives out when ignited.

Colour, - - - black.

Fracture conchoidal in every direction; lustre shining; exhibits a strong resemblance to pitch or pitch coal; and is susceptible of a high degree of polish.

Specific gravity - - - 1,236.

	Grains.
Analysis.—1,440 grains yielded, of volatile empyreumatic oil - - -	124
Water, containing oil that could not be separated - - -	582
Charcoal very compact, internal lustre strongly glistening - - -	566
Gaseous product, which burned with a bright light, but unpleasant smell - - -	168
	1,440

500 grains of this charcoal yielded 96 grains of brick-red ashes, which are found to be chiefly composed of oxyd of iron.

(5.)

EXTRACTS

from the Appendices to
preceding Reports.

Rep. I. Mr. Griffiths

(5.)

EXTRACTS

from the Appendices to
preceding Reports.

Rep. I. Mr. Griffith.

No. 9. - - - 3 feet thick.

Marl; colour, yellowish-white; does not adhere to the tongue.

100 parts contain:

	Grains.
Carbonate of lime - - -	64
Silex - - - - -	24
Alumine - - - - -	12
	100

No. 10. - - - 4 feet thick.

Yellowish blue clay; adheres strongly to the tongue.

100 parts are found to contain:

	Grains.
Alumine - - - - -	72
Carbonate of lime - - -	6
Silex, coloured by oxyd of iron -	22
	100

Being very much pressed for time in making the foregoing Analysis, I have been obliged to attend merely to the most useful results. I hope, however, in a future Report, to be able to lay before the Commissioners a more detailed Analysis, containing a minute examination of the composition of the ashes contained in the charcoal, and also the exact composition of the gaseous products.

EXTRACTS FROM THE APPENDIX TO THE SECOND REPORT.

REP. II.—Mr. Griffith, on the western part of the bog of Allen, in King's and Queen's counties; with Two Plates, viz. a Ground Plan and Section, of the drains in Geashill bog;—dimensions and number of drains; various species of bog manures; improvements, &c.

Mr. R. GRIFFITH, on Part of the Bog of Allen.

DIMENSIONS and NUMBER of DRAINS proposed.

Dimension of Drains.

IN laying out Drains for the discharge of the waters from the Bogs, which compose the western Division of this District, I have thought it necessary to add to the three classes of Drains already proposed in my former Report, a fourth class, which I shall call *Surface Drains*, as I have found from additional experience, that Bog Fields of 10 Irish Acres would be too large for convenience, and also that in certain situations the centre of the Field might remain too wet for agricultural purposes.

Main drains 14 feet top, 2 feet bottom, and 12 feet deep.

Minor drains 9 feet top, 1 foot bottom, and 8 feet deep.

Intermediate and cross Drains 6 feet top, 1 foot bottom, and 5 feet deep.

Surface Drains, in conjunction with the others; these Drains will divide the Bog into rectangular patches, containing $3\frac{1}{2}$ Irish acres.

The order and dimensions of the several Drains now proposed are, first, main Drains, which are placed in the lowest situations; their dimensions are proposed to be 14 feet top, 2 feet bottom, and 12 feet deep*. In the main Drains, smaller ones, which I have called minor Drains, are proposed to be cut, generally obliquely from the summits of the Bogs to the main Drains, so as to take advantage of the greatest possible fall; their dimensions are 9 feet top, 1 foot bottom, and 8 feet deep; these minor Drains are proposed to be carried at the distance of a quarter of an Irish mile from each other.

Intermediate between the minor Drains it is proposed to cut Drains of still smaller dimensions, viz. 6 feet top, 1 foot bottom, and 5 feet deep, and further at right angles to the minor and intermediate Drains, a system of cross Drains of similar dimensions with the intermediate Drains, is proposed to be carried 280 yards asunder, which would divide the Bog into square fields of 10 Irish acres.

The additional class of Drains now proposed, viz. surface Drains, are intended to divide the 10-acre fields into three parts, by two Drains to be cut parallel to the minor and intermediate Drains, that is, in the direction of the fall.

The

* In my Report on the Eastern Division of this District, I have given a Section of the form and description of the Process which I should recommend to be followed in sink-

ing main Drains. See First Report of Commissioners for Drainage of Bogs in Ireland.

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MAP OF GEASHIL BOG,
on which are laid down
the whole of the Proposed drains
FOR THE IMPROVEMENT OF THE BOG
By Richard Griffith Junr. & Co.
February 1811.

Scale of English Perches.
10 5 0 10 20 30 40 50 60 80 100 120

Scale of Irish Perches.
10 5 0 10 20 30 40 50 60 80 100 120

Ordered by the HOUSE OF COMMONS to be printed, 1st April, 1811.
And to be reprinted, 7th June, 1819.

Luke Hansard & Sons Printers. J. Baire sculp.

The whole of the foregoing Drains, if executed, would divide the Bog into rectangular patches 280 yards long, by $93\frac{1}{2}$ broad, which is equal to $3\frac{1}{2}$ Irish acres.

The dimensions of the surface Drains are 4 feet top, 1 foot bottom, and 3 feet deep.

Dimensions of the Surface Drains are 4 feet top, 1 foot bottom, and 3 feet deep.

In the annexed Plate, (No. 3,) containing an enlarged Map of Geashill Bog, the whole of the proposed Drains are laid down in their proper situations, though not exactly according to the plan above described, which irregularity is owing to the public road from Rosinallis to Geashill crossing the Bog between the summit and the principal fall.

The whole of the proposed Drains are laid down in Plate No. 3.

Owing to peculiar circumstances the system of Drains described has not been exactly followed in Geashill Bog.

It is impossible to lay down any general system of Drains which could be accurately followed in every instance; local circumstances must always be attended to; and every general plan, however perfect, must in some degree arrange itself according to them.

This must frequently be expected, as general systems must give way to local circumstances.

I deem this general system of Drains quite sufficient for that high and porous species of Bog which abounds in this part of the country, and which in the description of the several species of Bog I have denominated fibrous or red Bog.

Some persons may apprehend, that in very hot summers this porous Bog will become too dry; should this ever happen (and I do not mean to say it will not,) Sluices may be placed in the minor Drains so as to pen up the water in them, and in the cross Drains which run nearly at right angles to the fall; by these means the surface of the Bog may be easily moistened, and if it be wished, flooded, and the water will be discharged from one cross Drain into the next, which is on a lower level, and which, according to the plan laid down, should be 280 yards distant; by reference to Plates, No. 3, and 4, at the end of this Report, this will appear more clearly.

It may be apprehended, that porous Bog will become too dry in summer.

This may be avoided by Sluices being placed in the minor Drains.

By placing Sluices in the minor Drains AB, and CD, Plate, No. 3, at the points A and C, the waters running in the minor Drains will be backed into the cross Drain EF, and if thought necessary, may be made to flow over the surface of the great Bog-fields south of the cross Drain EF; the water flowing from the cross Drain EF, will be discharged into the cross Drain GH. The fall from the cross Drain EF, to the cross Drain GH, is shown in the Section of the minor Drain CD, Plate, No. 4; it is 2 feet 6 inches.

Reference to the Plates.

The practicability of draining very wet Bogs has been doubted by many sensible men, from the fact (which is undeniable,) that ten or fifteen yards towards the interior from the fall of a Turf-bank the surface of the Bog is frequently found extremely wet, and therefore, (it is said) if the surface of a Bog near the edge of a Turf-bank (from whence there is always a fall of at least 10 or 12 feet,) be not drained, it cannot be expected that any system of Drains will ever accomplish that end.

Practicability of draining wet Bogs has been doubted.

In answer to this most plausible argument it may be observed, that the surface of all Bogs near the edges is much lower than the interior where the springs are usually situated, which chiefly supplies the water contained in the Bog; the water from these sources naturally flows towards the exterior, which is on a lower level. How can it be expected that Turf-banks formed at the edges of Bogs so situated will prevent the flow of the water from the interior? but owing to the side-cuts usually made, will they not have a tendency to draw more water to those points than would have naturally flowed there? But if the Drains proposed in this Report were cut in any Bog, the water from the interior would be arrested in its progress towards the edge, and quickly discharged by the minor and cross Drains; the natural consequence of the adoption of such a system must be nearly perfect superficial consolidation.

Doubts answered.

In respect to the form which I have recommended for the several classes of Drains proposed in this Report, I have merely to mention, that I have been induced to adopt the plan, already detailed, from observing that similar Drains made by the Grand Canal Company in the Bogs of this District have answered perfectly well.

Reasons for recommending the proposed forms for Drains.

The chief desideratum in cutting Bog-Drains is the practicability of forming them in such a manner that they will keep themselves clean, and that their sides will have no tendency to fall in or collapse; the first of these objects may be attained by making the bottom of the Drains sufficiently narrow, that is, proportioned to the quantity of water which is likely to pass through them; and the sides may be prevented from falling in by giving them a sufficient slope; that which I have recommended is 6 inches increase of width on either side for every foot in height. Thus the proposed dimensions of minor Drains are 9 feet top, 1 foot bottom, and 8 feet deep.

Bog-Drains should be formed so as to keep themselves clean.

Their sides should be sloped to prevent their falling in.

I have seen Bog-Drains made with perpendicular sides, but always in firm Bog. I believe it to be utterly impracticable to form such Drains in very wet Bog; Drains of this description have always a tendency to choke, as they must necessarily be made 3 feet broad at bottom (if the Drain be 4 or 5 feet deep,) to allow the workmen room to throw out the Bog-stuff; their sides must also be expected to fall in, unless the Bog be very compact; even Turf-banks, which are always made in the driest and most compact parts of the Bog, frequently fall in in winter, and almost universally crack behind and hang over.

Bog-Drains, with perpendicular sides, must necessarily be too broad at bottom, and their sides will fall in if the Bog be wet.

Turf-Banks fall in in winter.

In fact, every kind of Bog-Drain in time will become narrower at top than when originally formed; those Drains already mentioned, made by the Grand Canal Company, were cut with a shape at least equal to that which I recommend; they have however now become considerably narrower at top. Had they been made originally with perpendicular sides they

Even Drains, with sloped sides, will in time become narrow at top.

Drains, with narrow bottoms, and sloped sides, are cheaper than those with perpendicular sides.

The minor Drains should be deeper than the cross Drains.

they must have long since fallen in.—Economy too (which ought always to be a consideration of importance in great works) favours the form of Drain which I have recommended, as Bog-Drains made broad at top and narrow at bottom are much cheaper than those which are made of equal breadth at top and bottom; as the former contains fewer cubic yards in a running perch of work, and the principal part of the excavation is at the surface where no pitching is required.

It is necessary that the minor Drains, which are intended to receive the waters from the cross Drains, &c. should be made deeper as well as larger than them, otherwise the water being nearly on a level would have a tendency to stagnate in the cross Drains.

Having thus disposed of the first and principal step towards reclamation, viz. Drainage, I shall proceed to consider the different kinds of Bog which are usually met with, as a different mode of treatment will be found expedient for each sort.

Description of the Different KINDS of BOG which are found in this Country.

In this part of the country two distinct species of Bog may be observed, which I shall denominate fibrous or red Bog, and Quagmire, and compact or black Bog.

I am fully aware, that the naming any thing by its predominant colour has been much disapproved of by men of science, as being too vague; I am, however, induced to persist in this mode, in hopes of being better understood by country Gentlemen and Farmers, with whom the names of Red Bog and Black Bog are perfectly familiar.

Fibrous or Red Bog.

Is the most predominant species in this country.

It is chiefly composed of the Sphagnum Palustre or Bog-Moss.

Fibrous or Red Bog is the most predominant species in this Country; in fact the chief part of the surface of most of our extensive Bogs is composed of it; on minute examination it appears to be almost entirely composed of fibres of the Sphagnum Palustre (or Bog-Moss), in a very perfect state; its external appearance is usually reddish brown, when dry its colour is darker, and approaches to clove brown; in this state it is usually covered by common heath (*Erica Vulgaris*) which gives it at a distance an olive, or, if in blossom, a pinkish hue.

When very wet this species of Bog assumes a greenish colour, owing to its being covered by various kinds of Moss (but chiefly the Sphagnum Palustre,) which grow luxuriantly on the surface.

In the section of the Turf-bank in Timahoe Bog, which with its description, &c. forms the Appendix to my former Report, it may be observed, that the fibrous Moss continues from the surface to the depth of 10 feet, below which point the fibres become less perfect, and the gradation of colour, as well as the distinctness of fibre, continue progressively, the one increasing and the other diminishing without any interruption (if we except the adventitious interposition of a thin stratum, chiefly composed of twigs of Alder and Birch trees) between the Red and the Black Bog, the several varieties of which latter form the lower strata of that section.

In all Bogs, where the upper Surface is composed of Red Bog, we may expect the lower part to be composed of Black Bog.

From hence it appears, that in all Bogs where the upper part is composed of Red Bog, we may expect to find the lower composed of Black Bog; and in this supposition, we are borne out in the observation that those parts of the Bog which extend on a lower level, beyond the edge of the high Red Bog, where Turf has formerly been cut, are universally found to be Black Bog.*

Of Quagmire:

Quagmire.

Quagmire is only a variety of the red Bog: I have given this denomination to those parts of the red Bog which are so wet and soft as to render their interior nearly inaccessible; where they occur, the Bog is usually shallow, it seldom exceeds 14 feet in depth, and rarely amounts to 20 feet.

Quagmires usually occupy the most elevated situations in the Bog.

They are the seat of Springs.

Tufts of Grass and Bushes are found growing on the Surface.

They frequently occupy the most elevated situations in the Bog, and diverge from thence by winding courses of irregular breadth towards the edges. The interior of these Quagmires is usually the seat of springs, to the nutritious particles contained in the waters of which may be attributed the growth of tufts of the white grass, or soft meadow-grass (*Holcus Lanatus*) and the florin or jointed-grass, and also to stunted trees or bushes of alder and birch, which are universally met with in the very wettest Quagmires.

Of Compact or Black Bog.

Compact, or Black Bog,

Has sometimes a strong resemblance to Pitch, or Pitch Coal.

It contains rarely any vegetable remains.

Black Bog is supposed to have grown slowly under Water, and that the Red Bog commenced growing

The colour of this species of Bog varies from deep reddish brown to jet black; in the latter case the mass is perfectly compact, and has a strong resemblance to pitch or pitch-coal, the fracture being conchoidal in every direction, and lustre glistening. This kind of Bog contains very rarely any vegetable remains; where they do occur, I have always found them to consist of some of the varieties of rushes which grow in stagnant waters; from hence we may be led to conclude, that black Bog was formed, or grew slowly, under water, which will perhaps sufficiently account for the great difference of composition that exists between that species of Bog and the red Bog, which we may suppose to have commenced growing when the black Bog had reached the surface of the water, and to have since

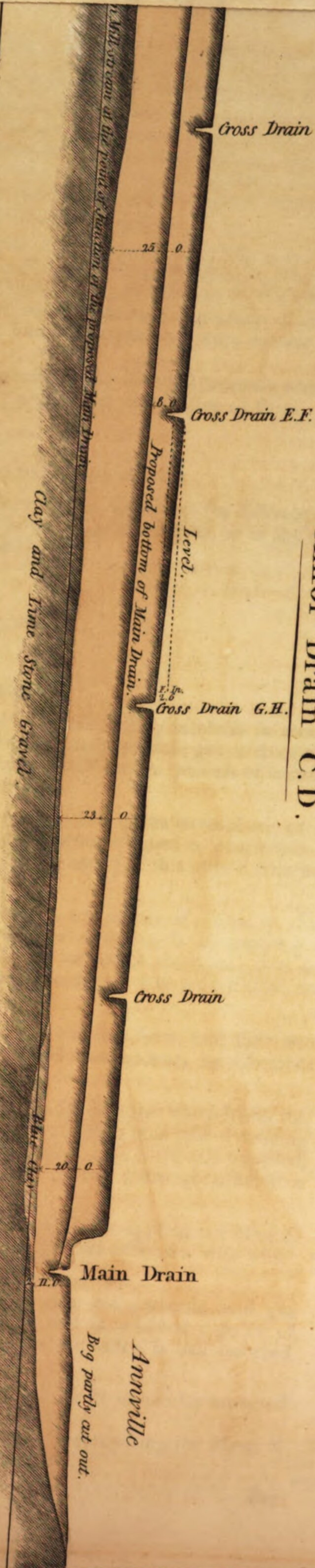
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* I had intended to have given in this Report a perfect Analysis of the different varieties of fibrous and compact

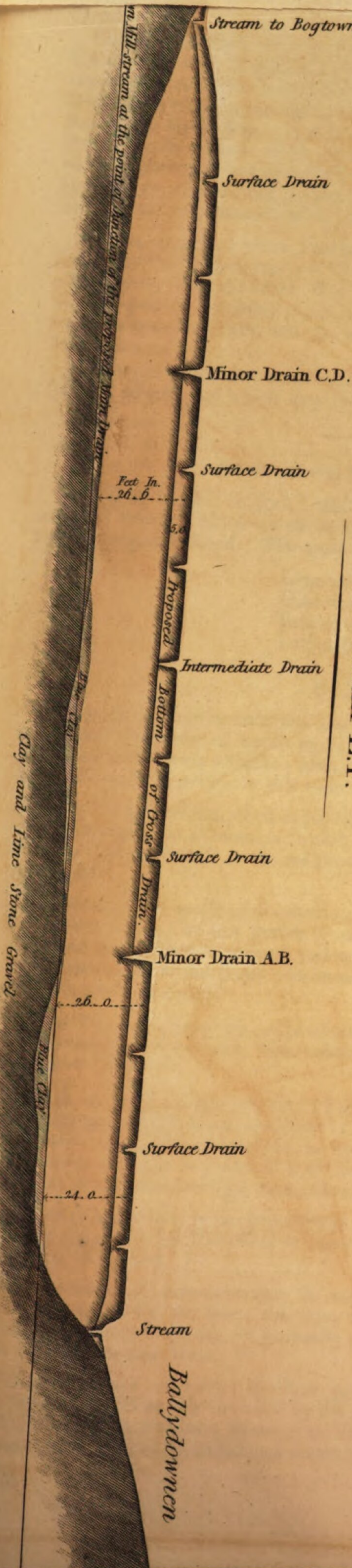
Bog, but a personal accident has prevented me from accomplishing it in time.

SECTIONS IN GEASHILL BOG.

Minor Drain C.D.



Crofs Drain E.F.



Scale of Length 420 Feet, or 20 Perches Irish to an Inch.
Scale of Height 40 Feet to an Inch.

RECEIVED BY THE SECRETARY

continued to vegetate, and to have annually increased in height above the water, and consequently above the level of the discharge, being constantly supplied with sufficient moisture by rain, or by capillary attraction from the water below. This supposition is strengthened by the fact, that twigs and branches of trees are sometimes found irregularly scattered at the point of junction of the Red and Black Bogs, see Section of the Turf-bank in my first Report.

when the Black Bog had reached the surface of the Water.

Compact or black Bog is frequently met with, unaccompanied by fibrous or red Bog, but in such cases it seldom forms great tracts; it is generally found in narrow strips, between the base of the gravel-hills which surround the Bog, and the abrupt edges of the red Bog, which rises frequently at an angle of 45° to the height of 15 or 20 feet above the surface of the black Bog. It is generally covered by a scanty coat of grass, which is of very little value on account of the great quantity of water by which it is overspread; in any part where the water is less abundant, or where it has been entirely, or even partially, discharged by drainage, the natural grasses may be observed growing; and on minute examination, white clover may sometimes be found vegetating amongst the grass.

It is sometimes found unaccompanied by Fibrous or Red Bog.

In those situations where Turf has been cut, black Bog, as above observed, is universally found; as the Turf-cutters are frequently prevented by the want of sufficient Drains from cutting deep into the black Bog, they necessarily leave the greater and by far the most valuable part of it behind them, as it is invariably found, that the compactness of the Bog increases with its depth, and the more dense the Turf, the hotter and more durable is the fire.

I shall now proceed to consider the several properties of the different manures which the Country affords, and which may be advantageously used in the reclamation of Bogs.

Of the several Manures which the Country affords.

In treating on this subject, I shall confine my observations entirely to the different fossil or earthy manures which are to be met with, either in the Bogs themselves, or in their immediate neighbourhood. The most important of which are, Manures.

Lime and Limestone,
Limestone Gravel,
Tenaceous or Blue Clay, and
Turf Ashes,

Of Lime and Limestone.

Carbonate of Lime or common Limestone, is a mild substance, nearly insoluble in water; it is usually composed of nearly equal parts of pure lime and carbonic acid gas or fixed air; this aerial acid is very volatile; heat, when applied by the well known process of burning lime, will easily expel it; in this state it is said to be caustic.

Limestone.
It is composed of nearly equal parts of pure Lime, and Carbonic Acid Gas.

Caustic or quick-lime, when exposed for some time to the action of the atmosphere, or to animal or vegetable substances (which it quickly dissolves) attracts a greater proportion of carbonic acid gas than it contained previously to its being calcined; in this state it becomes again mild. Lime.

The most simple mode of discovering whether Lime retains any degree of causticity, that is, whether it be or be not perfectly saturated with carbonic acid gas, is by applying a moistened piece of paper, stained yellow with turmeric to the surface of the Lime; if it be caustic, the colour of the paper will immediately be changed from yellow to red; if mild, no such effect will take place. Process of discovering whether Lime be or be not caustic.

When Water is poured on caustic-lime, it quickly loses its compact form, and falls into a nearly impalpable powder; this substance is usually called slacked-lime, by Chemists Hydrate of Lime. Slacked Lime.

Lime is not rendered less caustic by being slacked; the quantity of water which it absorbs, amounting generally to about one-third of its weight, has no other effect than that of dividing its particles; on exposure to the air the water contained in slacked-lime is quickly expelled, and carbonic acid gas is absorbed from the atmosphere, lime having a stronger affinity or attraction for carbonic acid gas than it has for water. Lime is not rendered less caustic by being slacked.

Caustic or quick-lime is the best state in which that substance can be applied as a Manure to boggy soils, as it has the effect of quickly dissolving the vegetable substance with which it is placed in contact. Caustic Lime is best suited to the improvement of Bog.

In the process of decomposition the vegetable substances give out carbonic acid gas which is attracted by the lime; the lime thus becomes mild, and is rendered capable of affording nutriment to plants, by gradually giving out the fixed air which it had absorbed from the decomposing Moss.

This process does not render the lime again caustic, as fixed air is as quickly attracted from the atmosphere as it is absorbed by the plants.

Mild Lime when used as a Manure on Bog, has no effect in decomposing the Moss, it therefore remains dead till called into action by the growth of plants. Mild Lime has no effect in decomposing the surface of Bog.

—(5.)—

EXTRACTS

from the Appendixes to preceding Reports.

Gypsum.

Has not been found in Quarries in the provinces of Leinster and Connaught.

For the same reasons that caustic or quick-lime is the best mode of applying that substance as a Manure to Bog, it is improper for upland, particularly when used as a surface dressing on grass; a very dirty fallow might however be benefited by a cautious admixture of caustic-lime, as it would have a tendency to dissolve the roots of noxious weeds.

Lime combined with carbonic acid is not the only state in which that substance is found in quarries; Gypsum (that is lime combined with sulphuric acid) is found in considerable quantities in the north of Ireland, but has not been met with, nor do I believe it exists, in quarries in the provinces of Leinster or Connaught.

On this account it is not necessary to dwell on its effects in this place as a Manure; I shall only add, that where it has been used in large quantities, it has been found destructive to vegetation.

Magnesian Limestone.

Carbonate of lime is sometimes found combined with carbonate of magnesia; this compounded rock, when heated, gives out its carbonic acid gas more quickly than common limestone, but attracts it from the atmosphere, and from decomposing plants much more slowly.

Caustic Magnesian Lime is superior to common Caustic Lime, as a Manure for Bog.

Mr. Professor Davy, in his late admirable course of Lectures (delivered in the Laboratory of the Dublin Society,) on the application of Chemistry to agriculture, observed, that magnesian limestone when rendered caustic, may perhaps be considered as superior to common caustic-lime as a Manure for Bogs, as its effects would be more lasting, for the reasons above stated, namely, that it requires a much longer time to become saturated with carbonic acid gas.

The mode of ascertaining whether Limestone contains any Magnesia.

The mode of ascertaining whether Limestone contains any Magnesia or not, is very simple, viz. throw a small portion of Limestone, coarsely powdered, into a glass containing dilute Muriatic Acid (spirit of Salt,) or dilute Nitrous Acid (Aqua Fortis;) if the stone contains much Magnesia a weak effervescence will take place, and a white cloud will be formed in the liquor; but if it contain none, the effervescence will be very strong, and the solution, if the Limestone be white, greyish white, or blue, will be nearly colourless; if the Limestone be black, the solution will necessarily be black, owing to the colouring matter of the stone, which, in the instance of Kilkenny Marble, contains from one half to one per cent of carbon or coaly matter.

Limestone Gravel.

Limestone Gravel.

It appears from the descriptions given in my former and present Report, that the whole of the Bogs in this District are surrounded by abrupt ridges of limestone gravel; and also from the Sections, that in every instance this substance is found immediately below a thin stratum of blue clay, which is interposed between it and the bottom of the Bogs.

The hills of limestone gravel differ materially from each other in the size of the rolled masses of limestone of which they are chiefly composed, and may be classed in the following manner, viz.

First variety.

First.—In some instances these rolled masses exceed three feet in diameter; where such occur, clay mixed with small limestone gravel, or rather limestone sand, is usually found interposed between them.

Second variety.

Second.—Extensive ridges of rolled limestone are sometimes found perfectly free from any admixture of clay or other foreign substance; in this case the rounded pebbles are nearly of an equal size, seldom exceeding three inches in diameter, and rarely less than one; these ridges have a strong resemblance to the rounded strong masses which form the edge next the land of a rocky sea-beach, and evidently had their origin from eddies formed by strong currents of water running in nearly opposite directions.

Third variety.

Third.—Hills composed of strata of limestone gravel, or rather of limestone sand, are also frequently met with; though the stratification is not perfectly regular, still the beds are very distinct from each other, and usually differ very materially both in their composition and in the size of their particles; some (particularly the upper beds) contain much clay, whilst others are perfectly free from that substance, having little or no tendency to sully clear water when thrown into it.

First variety used as manure.

These three varieties of limestone gravel are applicable to three different uses: The clay mixed with limestone gravel or limestone sand, contained in the first class, and also in the upper part of the third, has long been known as an admirable manure for the production of wheat, the Farmers in this country call it corn or manuring gravel; this substance has also been employed with signal success in the reclamation of fibrous or red Bog, of which I shall hereafter speak more at large.

Second variety used in making Roads.

The second variety of limestone gravel is used chiefly in the formation of Roads, and is admirably adapted to that purpose, but if used in forming Roads on Bog, it ought to have a sole or sub-stratum of clay and branches of trees (if they can be procured) first laid on to prevent its sinking unequally, or mixing with the upper surface of the Bog.

Third variety used in building.

The pure beds of the third variety are usually employed in building, and from their being perfectly free from clay, form, when not overcharged with lime (a caution rarely observed) perhaps the hardest mortar that we are acquainted with.

Tenacious or Blue Clay.

This substance is found almost universally forming the immediate sub-stratum of the Bogs in this country; it is generally perfectly free from gritty or stony particles; where they occur, it comes under the class of corn or manuring gravel.

Tenacious or Blue Clay, forms the immediate substratum of the Bogs.

Blue clay is an excellent manure for fibrous or Red Bog; it fills up the interstices, and gives compactness and solidity to the surface, and owing to its quality of retaining water, prevents this porous species of Bog from becoming too dry in summer.

It is an excellent Manure for Red Bog.

Of Turf Ashes.

This substance is divisible into three distinct species, viz.

Ashes.

White Ashes, Yellow Ashes, and Red Ashes.

White Ashes.

As a manure this kind of ashes is of little or no value, at least it has hitherto been found impossible to collect it into a sufficient body to bring its useful properties into action on a large scale.

White Ashes are of little or no value as a Manure.

Yellow Ashes.

By yellow I mean that which remains from the burning of that variety of compact or Black Bog which contains lime.

Yellow Ashes are much esteemed as a Manure both on compact Bog and upland; they will give excellent crops of rape, potatoes, oats, &c.

Yellow Ashes are much esteemed as a Manure for Black Bog.

Red Ashes.

Are considered rather superior to yellow or earthy ashes as a manure; they have however nearly similar effects in the production of crops.

The whole of the foregoing Manures may be applied beneficially to every species of Bog; but the degree of their effect will be proportionate to the capability which the Manure possesses of counteracting any injurious qualities which the Bog may contain in itself, or by adding a substance which may bring its native valuable qualities into action. I shall now therefore take into consideration the effects which these several Manures will exert on each species of Bog.

Red Ashes are also excellent on Black Bog.

Application of the foregoing Manures to the different kinds of Bog.

Manure best suited to the improvement of Red Bog.

This species of Bog when first drained is extremely porous and open in its texture, on which account it is liable to become so dry in summer, that the natural grasses which in spring had vegetated on its surface, frequently die from want of moisture; from the absence of water and by long exposure to the atmosphere, the surface of the Red Bog is decomposed; the mass is thus rendered more compact, and becomes capable of supplying food and moisture to plants in dry weather; this operation of nature, though certain, is however very tedious.

Manures suited to Red Bog.

Surface is decomposed by exposure to the Atmosphere.

I shall therefore submit to your consideration, the means we have in our power of quickening her pace, and of rendering the improvements more perfect.

That species of limestone gravel which is called corn or manuring gravel, is the most efficient Manure with which we are acquainted, for creating a rapid and lasting improvement on the surface of fibrous or red Bog.

Corn Gravel is the most efficient Manure for creating a lasting improvement on Red Bog.

Two modes of applying this substance are practised; the first, is by merely spreading gravel on the surface of the Bog when drained. Its effects are manifest; they are superior, although somewhat similar, to those ascribed to tenacious or blue clay, to which must be added the nutritive qualities of the lime contained in the gravel, which gives out its fixed air to the plants which are supplied with moisture by the clay in very dry weather, and are thereby kept alive.

First mode.

Some farmers plough or dig up the Bog, previous to spreading the gravel, and afterwards gather the whole into heaps and burn them; a very valuable and heavy kind of ashes is thus formed, which is composed partly of white ashes, partly of burned clay, and partly of caustic or quick-lime.

Second mode.

The quick-lime immediately acts on the red Bog and dissolves it, but the clay loses its tenacity by being burned, and is thereby deprived not only of its quality of retaining water, but of its tendency to remain on the surface of the Bog; the whole of the ashes having no check will naturally descend through the open fibres of the Moss, and in a few years they will have sunk so far that the surface will be deprived of their beneficial effects. If this reasoning be just, the second mode of proceeding, namely, by burning, should be deferred a few years, or until the surface of the drained Bog should have so far subsided as to become sufficiently solid to retain water, and to prevent the passage of the ashes downwards. In such

The second mode of proceeding should be deferred till the surface of the Bog has become solid.

such circumstances, the most beneficial effects might be expected from burning the surface of the Bog.

Blue Clay is a good Manure for Red Bog.

Tenacious or blue Clay, comes next in the order of valuable Manures, for the improvement of fibrous or red Bog; its effects have been already described; caustic or quick-lime might be added with great advantage in conjunction with the clay, as it would dissolve the surface of the Bog, and would be prevented from passing through the fibres of the Moss, by the tenacity of the clay.

Caustic Lime should not be used alone as a Manure on Red Bog.

For the reasons already stated, it is almost unnecessary to add, that caustic lime should not be used alone as a Manure on fibrous or red Bog, but should always be accompanied by clay or corn gravel.

No very beneficial effects can be expected from the application of Ashes alone, as a Manure on Red Bog.

No very beneficial, or at least no permanently good effects, can reasonably be expected from the application of either yellow or red ashes alone as a Manure, on the surface of a red Bog when drained, as these substances, unless accompanied by corn gravel or by clay, would almost immediately pass through the fibres of the moss and be lost.

Improvement of Quagmire.

Improvement of Quagmire.

Though this species of Bog is the wettest and least inviting of any, when in its native state, it is more easily drained, and becomes profitable with less expense than any other.

Manures, similar to those proposed for Red Bog, should be resorted to.

Shortly after the excess of water has been dischaaged, a thick coat of sweet grass usually springs up; if it be wished to raise crops on it, the same Manures which are proposed for the reclamation of red Bog should be resorted to, and the same precaution observed to prevent the effects of porosity on account of the open texture of this Bog.

Manures best suited to the Reclamation of Black Bog.

The principal difference which exists in an agricultural point of view, between fibrous or red Bog, and compact or black Bog, is the extreme porosity of the one, and the density of the other; their treatment must be therefore extremely different.

Yellow or Red Ashes are the best Manure for the improvement of Black Bog. Lime used.

The Manure which has been found most efficacious on this species of Bog, is ashes produced from the burning of this substance itself; if it be wished to cultivate grass for meadow or grazing, lime is very beneficial; if the boggy soil be in fallow, the lime should be caustic; if it be intended only as surface-dressing on grass, it should be mild; if clay or limestone gravel be used, they should be gathered into heaps and burned along with the surface of the Bog, so as totally to destroy their power of retaining water, to which this species of Bog is too much disposed.

Long cultivation renders Black Bog friable.

When black or compact Bog has been long subjected to annual cultivation, it loses its compactness and becomes very friable; when this happens, limestone gravel or clay may be beneficially resorted to.

Cultivation of Bog.

I have thus endeavoured to lay before you a general description of the different species of Bog, and also of the different Manures which the country affords, pointing out, as far as the experience of others and my own observation could guide me, the particular effects which each kind of Manure might reasonably be expected to have on the different species of Bog.

Crops best suited to Bog cultivation.

I shall now lay before you some general remarks on the crops and grasses which appear to be best suited to Bog cultivation, together with a statement of the process (accompanied by an estimate of the expense thereof) which I should recommend for the complete reclamation of red Bog.

Rape. Oats, Potatoes, and Rye.

Hemp has been tried, but did not always succeed.

Rape appears to be the most favourite crop, at least in the commencement; Oats, Potatoes and Rye, are found to answer nearly as well; the latter is, however, frequently good when other crops fail. I have seen Wheat tried on the surface of very deep red Bog; the produce was tolerably good, but the grain was not full. Hemp has been tried by many persons with various success; where failures have occurred, they are perhaps attributable more to ignorance of the mode of cultivation, and the proper method of saving and drying, than to any imperfection in the boggy soil. It is to be observed, that this plant likes a deep soil, but will not thrive in wet; unless, therefore, the Bog shall have been previously completely drained, the soil (to some depth) turned up, and exposed to the atmosphere, and intermixed with limestone gravel, there can be little hope of obtaining a valuable crop; but with these precautions the best success may be expected.

Extract from Mr. Nasmith's Essay on the Properties and Uses of Peat.

Mr. Nasmith, of Hamilton, in his Essay on the Properties and Uses of Peat, gives the following description of the several species of Grass which have been known to grow on boggy soils:

"Anthox-anthum odoratum (sweet-smelling early meadow grass or vernal grass) is found scattered every where on Peat-grounds where land-water has flowed; it is a valuable grass, palatable to the cattle, springing early, and putting forth abundance of new leaves through the summer.

"Alopecurus pratensis (meadow fox-tail grass) grows in similar places, and is valuable for Hay and Pasture.

"Poa pratensis (great meadow-grass) and Poa trivialis (common meadow-grass) are grasses to which a Peaty soil is highly agreeable; they propagate very fast in it; cover the

- " the surface with a close Turf, and are excellent Grasses, very productive both of Hay and
 " Pasture.—*Cynosurus Crystalus* (crested fox-tail grass) I have not unfrequently seen about
 " the borders of a Peat-field; it abounds in the best pastures, and cattle are fond of it.
 " Children might be taught to know these plants, and collect the heads as soon as the
 " seeds were ripe, two or three years before a field was to be sown; these seeds sown on a
 " piece of well-prepared ground, each species by itself, would soon produce a stock which
 " might be preserved till it was wanted.
 " *Trefolium repens* (white Clover) abounds much on Peat with which earth has been
 " mixed; its value for Pasture is well known, and as its seeds are to be had in the shops it
 " ought not to be omitted.
 " *Sathyrus Pratensis* (common yellow flowering vetchling, or tare everlasting) I have
 " sometimes, but not frequently, seen about the borders of a Peat-field; it is valuable fod-
 " der; and as it is very prolific, its seeds might easily be gathered; and trial made of it
 " would succeed.
 " *Lotus corniculatus* (Bird's-foot trefoil, has a yellow flower like that of broom, and
 " leaves with three lobes) is the only other plant of the diadelphia class, which I recollect
 " abounding on Peat-grounds; it has been much extolled as food for cattle, but they seem
 " not fond of it while green; it is not rejected in hay, and is perhaps eaten when other
 " grasses fail; as it is congenial to a Peat-soil, and grows to a good size, it should certainly
 " be adopted.
 " *Trefolium pratensis* (meadow fox-tail) the cow-grass of the English farmer, puts out
 " many horizontal roots from the main one, and would probably keep hold of a Peat-soil;
 " if it should succeed it would make a valuable fodder, and therefore merits a trial."

(5.)
 EXTRACTS
 from the Appendixes to
 preceding Reports.
 Rep. II. Mr. Griffith.

Expense of Reclaiming Bog, so as to render it worth £. 1. 10s. per Acre.

In respect to the mode by which the Bogs when drained shall be brought into profit, by distributing on the surface the Manures above-mentioned, much will depend upon the relative circumstances of each particular Bog, in respect to the distance of the gravel, clay, or lime to be laid out upon it. Expense of reclaim-
ing Bog.

In some situations it may be found expedient, by placing stop-gates at the main Drains, to dam up the water, and thereby to make temporary Canals, whereupon the Manure may be conveyed on floats into central situations, and from thence, either in times of frost or after some continuation of dry weather, it may be distributed by carts or wheel-barrows upon the surface of the Bog. I understand, that Mr. Edgeworth has (in such situations) recommended the use of moveable temporary railways; and I am fully persuaded, that if they be constructed upon a simple plan they will be found to diminish the expense, and considerably to facilitate the progress of the work: but these are only general, and perhaps obvious suggestions. The practical improver will expect closer and more distinct views of the subject, particularly in regard to the amount of the expense, and the probable return to be expected in the course of 3, 4, or 5 years, for the original out-lay; I shall therefore give what appears to me (upon the best information I have been able to obtain) a fair and candid prospectus of such an undertaking.

I should recommend, that after the several Drains suggested by me shall have been completed, that the Bog should be suffered to remain for eighteen months, or perhaps two years, to subside; during which time it will be necessary to employ a sufficient number of labourers, under the direction of a competent Overseer, to remove obstructions, and to keep the Drains in perfect repair; in estimating the Drains, I have increased the price per cubic yard to cover this expense.

This I consider to be a very important part of the system, and in very wet Bogs it will require much attention, at least for the first year.

That part of the Bog which lies nearest to the clay or gravel, will of course be brought into profit at a smaller expense than that which lies more distant, the estimate must therefore be formed upon the average expense of manuring a given number of acres; suppose a square of 400 acres, divided into twenty equal parts, by main, minor, and cross Drains, and communicating with each other, wherein the water in some instances may be occasionally dammed up by stop-gates, and the whole when necessary brought nearly upon one level as above-mentioned.

The gravel and clay may be deposited by narrow floats on the borders of the several divisions.

The first process ought to be to form roads along the edges of the Drains, sufficiently strong to bear the weight of small carts; and again I must recur to the superior advantage in this process, to be derived from the plan of wooden moveable railways. The first object should
be to form Roads.
Wooden moveable
Railways would be
very useful.

I am next to consider the quantity of manuring-gravel which would be sufficient to cover an acre of Bog, in order to render it capable of producing a good crop of Rape, Potatoes or Oats, or rather a succession of these three crops, without any further addition of Manure than the Ashes that would be produced by a light or partial burning of the surface. I should suppose that six loads to the perch of gravel (each load containing about seven hundred weight) would be amply sufficient to cover each acre, together with a slight top-dressing of Ashes, or (if more convenient) of quick-lime, say one thousand loads, or three hundred and fifty tons of gravel to the acre, I should calculate, that upon a general average, each load could 1000 Loads of Gra-
vel, equal to 350 tons,
are proposed to be laid
on the Bog.

The Expence would be £. 16. 13s. 4d. per acre.

Caustic Lime £. 6.

Planting and digging, &c. an acre of Potatoes £. 10.

A second Crop of Potatoes should follow the first. 3rd year a

The Bog would then be worth £. 1. 10s. per acre.

Another rotation of Crops.

1st Crop Rape.

2d Crop Potatoes in Drills, to be followed by Oats and Meadow.

An additional Covering of 250 Loads of Gravel proposed.

Reclaimed Bog valued at £. 1. 10s. per acre.

could be laid on the Bog at an expense of about four-pence per load, or £. 16. 13s. 4d. per acre, and that the top-dressing of caustic-lime would cost about £. 6 per acre more, to which add the expense of planting and digging out an acre of Potatoes, £. 10. I would recommend a second crop of Potatoes to follow the first, in which case the produce of the second year will be found greatly superior to that of the first; the third year a crop of Oats, and to lay down the land with Hay-seed; fourth year Meadow, without any additional expense.

crop of Oats. 4th year Meadow.

If I am not greatly mistaken, the Bog so treated would be completely reclaimed, and would, in its then state, be well worth £. 1. 10s. per acre per annum.

There is another rotation of crops which I should prefer to the foregoing, and which is also frequently practised, with the exception, however, that the large quantity of clay and gravel which I have recommended, is seldom if ever afforded to the Bog in the first instance, and on which increased quantity I build my expectation of *perfect* reclamation, by forming a solid upper stratum on the Bog, without which the plough can only operate at particular seasons, and even then with danger and difficulty to the cattle.

After the one thousand loads of gravel as above stated shall have been laid out and spread, the whole should be lightly ploughed, and after a slight top-dressing of lime, or of red ashes, which latter may be easily produced by burning the surface of the nearest red Bog, a crop of Rape should be sown, to be succeeded with one crop of drill Potatoes, Oats and Meadow and as soon as the hay shall be mowed, about two hundred and fifty loads of gravel or clay per acre should be laid out and spread upon the surface. This process would leave the land (for such I might then call it) in a state of great power and vigour, and infinitely more profitable to the farmer for Tillage, Meadow or Pasture, than most of the uplands in the neighbourhood. I might venture to say, that after the above process, including the second top-dressing of gravel, the value of the Bog to the farmer would far exceed (but I shall state it at no more than) £. 1. 10s. per Irish acre.

[Mr. Griffith then proceeds to various details, which are inserted in the Second Report.]

REP. II.—Mr. Jones, on Bogs in Meath, Westmeath, and King's county;—General observations and plan for opening drains; with a Plate.

Mr. JONES, on the Bogs in Meath, Westmeath, and King's county.

Origin and growth of Bogs.

With respect to the origin and growth of the Bogs in this Kingdom, I believe it is pretty generally known and understood, that the substance of which they are composed is vegetable matter in various stages of decomposition, resting on an under strata, in general of blue or yellow clay or gravel, and frequently of marle, the depth of which below the surface varies from ten to forty feet, and is scarcely ever regular for any great extent, as will be seen by the Sections taken for the main and transverse lines of Drainage.

Causes of wetness in Bogs

the tenacity of the matter causes the water to lie on the surface.

Bogs in general are more or less saturated with water, the cause of which is, either springs from the under strata on which they rest, or those issuing from the adjoining high lands, or from rain falling on their surface. The tenacity of the vegetable matter of which they are composed, causes the water in the latter instance to be retained on their surface, by which means vegetation is chilled, except for the warmest months in the year, when the heat of the sun absorbs a great portion of the moisture, and causes a partial growth of heath, moss, and grass, which by the winter's rain is again deadened and decomposed. A succession of the above circumstances has, I conceive, tended much to the growth of Bogs in this Kingdom from swampy marshes or stagnant pools to their present state.

Bogs in this District easily reclaimed.

Circumstanced as the Bogs are in this District, their reclamation could be much more easily effected than appears at first view, the outlets or discharging points of their waters lying in general so much below their summits, that the Drains executed as marked on the accompanying Map, would carry off all the water of the Bog so effectually, that in the course of a short time they could be rendered fit to receive agricultural improvements.

Good effects of Drainage.

The first good effect that would result from the Drainage of wet Bog, would be a general growth of heath, and grass of a peculiar sort, which vegetates spontaneously on the surface of reclaimed Bogs, and is excellent food for young cattle. As the Bogs subsided by the sinking of the Drains, cattle of every description might feed on them; so that by the expenditure of a comparatively small sum of money, the large tracts that are now in an unproductive state would become so much pasture, a great portion of the edges of which might be immediately tilled, which improvement would extend ultimately to the centre of the Bogs.

Main Drains.

Transverse Drains.

The main Drains through the Bogs are laid out (according to circumstances at about 80 perches asunder, and the transverse Drains, crossing the main Drains generally at right angles to them, are also laid out at the distance of 80 perches from each other; the principal consideration has been, to point them in such directions as to give the waters the greatest fall from the summit of the Bog, to their outlets or natural discharging points.

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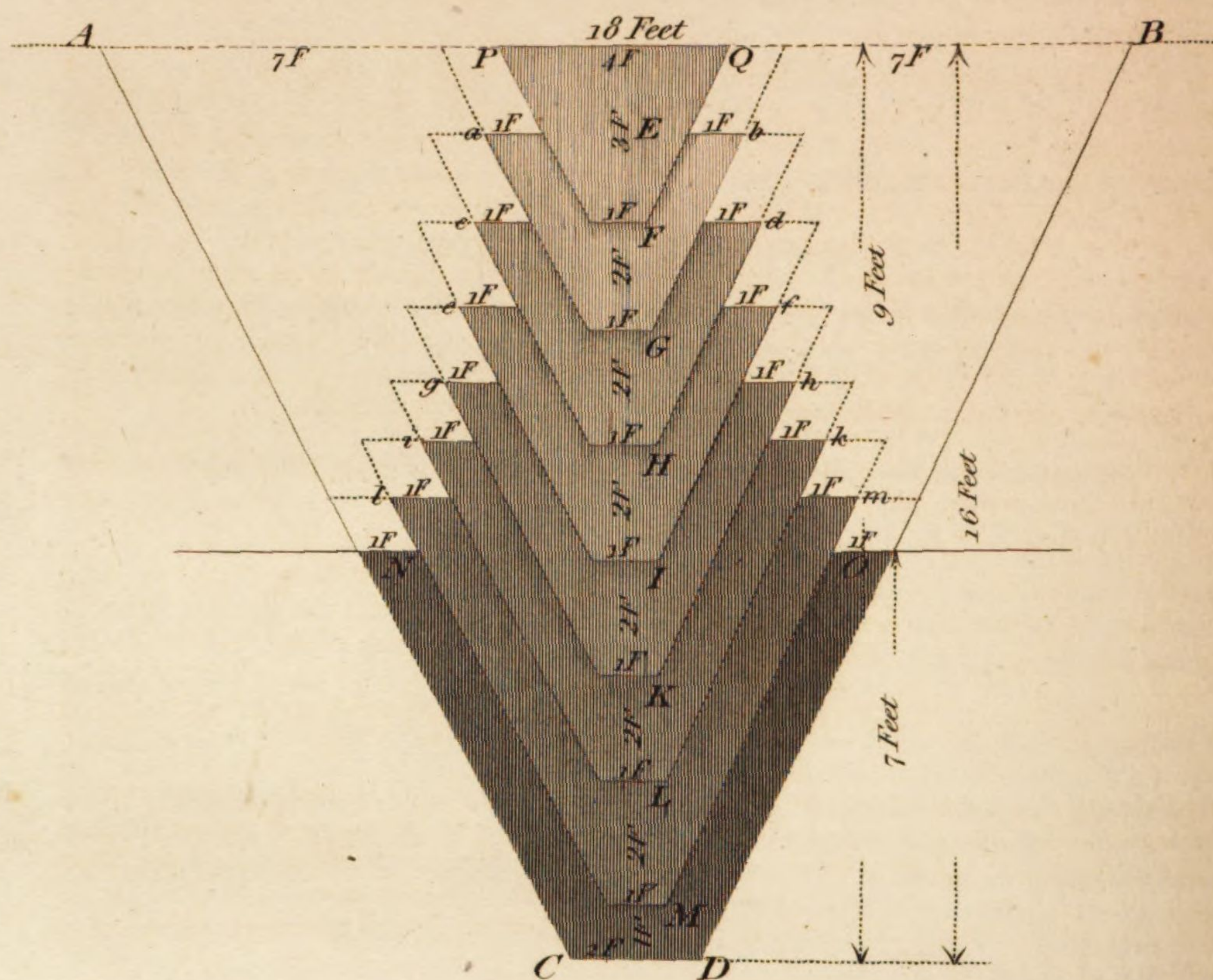
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PLAN FOR EXECUTING DRAINS IN BOGS



The Section <i>ABCD</i> Contains in One Perch.....				124	Cubic Yards
The first Cutting <i>E</i> Contains in <i>d</i> ^o				5½	
2 ^d	<i>d</i> ^o	<i>F</i>	<i>d</i> ^o	5½	
3 ^d	<i>d</i> ^o	<i>G</i>	<i>d</i> ^o	6¼	
4 th	<i>d</i> ^o	<i>H</i>	<i>d</i> ^o	7	
5 th	<i>d</i> ^o	<i>I</i>	<i>d</i> ^o	8	
6 th	<i>d</i> ^o	<i>K</i>	<i>d</i> ^o	10	
7 th	<i>d</i> ^o	<i>L</i>	<i>d</i> ^o	11¾	
8 th	<i>d</i> ^o	<i>M</i>	<i>d</i> ^o	12	66

The main and transverse Drains through the Bogs will be found to consolidate and cause them to subside very considerably; yet for the purpose of rendering them fit to receive agricultural improvements, intermediate Drains, both between the main and transverse lines, will be indispensably necessary; these Drains to be midway between the others, and sunk five feet deep.

Intermediate, or Surface Drains necessary.

Wet Bogs will not admit of the main and transverse Drains to be sunk at once to their full depth, as the sides would have a tendency to close together, and the bottom to rise and swell up. Time, therefore, must necessarily be given for their sinking.

Wet Bogs will not admit of deep Drains being sunk at once to their depth.

The main Drains through deep and wet Bogs, I propose to be sunk from 14 to 16 feet deep, and the transverse Drains to be sunk from 10 to 12 feet deep; the whole to be two feet wide at bottom when finished.

Size of Main and Transverse Drains.

The annexed PLAN of the method to be pursued in sinking Drains in Bogs, will, I trust, be found clear and satisfactory.

The mode that I have found most eligible to adopt in executing Drains through Bogs, is to begin by first opening them (like E in the annexed Plan) viz. 4 feet wide at top, sinking them 3 feet deep, and making them one foot wide at bottom throughout their whole extent. When the Bog by this means has subsided (a foot or eighteen inches) to *a b*, which it will do in the course of a very short time, immediately adjoining the Drain, repeat the sinking by taking off one foot on each side of them, which will give sufficient room for sinking them two feet deeper. As the Bog will gradually subside to *c d*, *e f*, *g h*, *i k*, *l m*, *n o*, the above operation of resinking the Drains should be continued until the whole be sunk to the depth intended: it is on the above principle that I have calculated the Drains to be sunk through the Bogs in this District.

Method of working Drains in Bogs

A, B, C, D, is the Section of a main Drain 16 feet deep, 2 feet wide at bottom, slopes of the sides 6 inches horizontal to 12 inches perpendicular. A perch (21 feet in length) of a Drain of the above Section would contain 124 cubic yards of excavation; but by sinking the Drains in the manner above described, and according to the several repeated cuttings E, F, G, H, I, K, L, M, a perch would only contain 66 cubic yards when excavated to the bottom, provided the Bog subsided in the proportion that is here amplified, which in this instance is 9 feet from the original surface to the surface which the Drains would be at when finished; they will then be nine feet wide at top and 7 feet at depth. By adopting this method, a saving is made in actual excavation of 58 cubic yards of Bog and fluid matter contained in the spaces of A P N, Q B O, which would inevitably be encountered in the instance of opening Drains to the full width at top, according to the depth to be sunk.

Saving in excavation by executing Drains in manner here proposed

In moderately firm Bogs, the saving in point of execution will not be quite so much as in the above example; but in the wet Bogs it will be found to be probably more, as the subsiding will be greater.

Saving in execution of Drains, with respect to firm and wet Bogs.

In almost all instances of draining Bogs, I conceive that the above is not only the best practical method to pursue, but also the most eligible and economical for cutting Drains; the widening and sinking the Drains being repeated as the Bog consolidates, it is evident that the sides will not have the same tendency to collapse, nor the bottom to swell up, as would be the case were the Drains to be opened to the full width requisite to sink them at once to the proposed depth.

During the operation of sinking the Drains, frequent trials should be made to give vent to the water from the bottom and under strata, by boring to it with an auger of about three or four inches in diameter. This operation is attended with very little labour, and the beneficial effects of it I have frequently observed: as, whatever springs may be at bottom, by this means will get vent, and discharge by the Drains, which would otherwise continue to saturate, and keep the Bogs afloat.

Bottom of Drains to be bored during operation of sinking.

It is by no means to be inferred that the entire surface of the Bog will subside in the same proportion as that adjoining the Drains; but this circumstance need not impede the widening and deepening of the Drains in the manner above described, as, by the time that the first sinking is performed throughout their extent, the Bog will be so much subsided at the place where first opened, that it will be in a state to admit of being proceeded on with the second cutting, and so progressively till the whole is finished.

The whole surface of Bog will not subside in same proportion as adjoining the Drains.

REP. II.—Mr. Longfield, on Bogs bounded on the North by the Grand Canal between Tullamore and its junction with the Shannon, called the district of the River Brisna; plans for drains, general observations, improvements, &c.

Mr. LONGFIELD, on the Bogs to the South of the Grand Canal, in that part between Tullamore and Shannon Harbour.

I have the satisfaction also to state, that I have every where found sufficient falls from the Bogs to carry off the surface waters of them, and in general it is practicable to drain the under strata, should such an expensive undertaking be ever deemed advisable. But such deep sinking in the interior of the Bogs I do not conceive absolutely requisite to effect the object of Drainage (unless you reach the under strata) from this very extraordinary circumstance,

(5.)

EXTRACTS

from the Appendices to
preceding Reports.

Rep. II. Mr. Longfield.

cumstance, that the vegetable matter of which the Bogs are composed, is so far from being of a porous nature, that it is perfectly retentive; of course Main Drains of even 20 feet deep and 80 perches, as under, would have no more effect upon the centre of the surface between them, than if they were only sunk to the depth recommended for Surface Drains.

This may appear improbable; but nothing can demonstrate the truth of the observation more, than simply observing, that the numerous duck-pools, and lodgments of water in the Bogs, are almost all upon different levels, whereas if there existed any internal communication, this would not be the case. Under this impression I have formed my system of Drainage to be composed of numerous Main, Receiving, and Surface Drains, of moderate dimensions. The circumstance of this extraordinary quality of the soft Bog stuff is fully proved in the Bog of Ballycotton (see Report upon the 10th Division,) where there exists two considerable bodies of water near each other, differing two feet and an half in their levels.

I have also found in many situations, good manuring gravel, sufficiently near the surface to be raised without incurring much expense or trouble; where such cases occur, I have particularly noticed them on the Map, and would recommend raising the stuff to the surface; but where the manures cannot be had nearer than from 8 to 10 feet, I would not advise any attempt to diffuse their benefits.

Every where possible, I have attended to three principal objects in laying down the situation of my Main Drains. First, to answer as Tap Drains; secondly, as occasional channels of navigation; and thirdly, when the chief object of Drainage is attained, and the Bog reduced to a state of cultivation, those drains can be finally dammed up, and the water generally diffused over the surface for purposes of irrigation. The value of water manure upon dry and parched Bogs, has been fully exemplified, to my utmost satisfaction, in the course of my late Surveys, which being commenced on the 21st of January, and finished in July, gave me an opportunity of daily witnessing the progress of vegetation in the winter, spring, and in as hot summer months as we have had in this kingdom for many years. In the month of February I observed, particularly the Fiorin grass (so highly recommended by Dr. Richardson) growing luxuriantly in many parts of the Bog Drains, and on the sides of the Roads, during a continuance of severe wet and snowy weather; and I observed the very same grass dry up and wither as the drought approached, and continued so in April, May, and June. From the 1st of April till about the 20th of June, we had a continuance of extreme hot weather, during which time there was not the least appearance of vegetation in the Bogs, and very little on the land; from that period to the middle of July we had many heavy showers, and some constant days of rain, the effect of which created almost immediate vegetation, for in the course of those few weeks, the Bogs that before presented a surface not even affording heath itself, now produced a most abundant supply of sappy and luxuriant grass, which it is to be regretted could not be grazed, the Bogs being inaccessible to cattle; for although the first 3 or 4 inches of the surface was both dry and crisp, yet if that were broken through by man or beast, it is a chance if ever they should be able to extricate themselves. If it were possible to entertain doubts of the efficacy of irrigation on drained Bogs, this single instance, I trust, will be sufficient to remove them; it is very seldom that this climate affords an opportunity of proving this fact so satisfactorily as this year; the effect of the unusual drought of this season may be presumed to have acted on the surface as effectual drainage, and the sudden fall of rain operated as an irrigation supply, which from the state of the Bogs, was as suddenly absorbed as if carried off by the most complete drainage for that purpose; by this means the Bogs were in a great measure prepared to receive the waters, and by retaining them no longer than was necessary to promote vegetation, they produced the sudden spring of grass already mentioned.

It is with pleasure I have here to observe the praise-worthy experiments made by Lord Rosse, according to Mr. Richardson's plan for cultivating the Bogs of Ireland. The portions of Bog allotted to these experiments are an acre on the Red Bog of Ballywilliams, near Parsonstown, 27 feet deep, and an acre of the Bog of Clobrone, of the same nature. The first of these experiments was prepared by levelling the Bog, and sprinkling it with a compost of lime and clay, and the grass was planted in October last. I went through it frequently in June, and saw the grass planting in many spots over the surface appearing both healthy and luxuriant; the uncommon drought of the season was much against its growth, but I have no doubt it will next year present a pleasing prospect of what may be done on those unprofitable tracts, and prove to the proprietors, the possibility of increasing their own estates on much easier terms than by purchasing the fee simple of others.

In treating of improvements upon such extensive tracts of plain surface, I conceive it to be of the highest importance to take into consideration the most efficient way of providing shelter, as it must be admitted that cold and chilling blasts, passing uninterrupted for a distance of three or four miles, or even less, must check vegetation, and be prejudicial to cattle, particularly young stock; which description it is most probable the improved grassy Bogs would be best adapted for, until their surface should become consolidated and interwoven with vegetation. To obtain this desirable acquisition, I would propose to intersect the Bogs with belts of skreen planting, in such proportions as local circumstances might render necessary, always keeping in view to break the effects of the prevalent westerly winds. The object of shelter would not only thereby be attained in a few years, but also a profitable growth of Timber of considerable magnitude, which would contribute to repay the expense of Drainage, &c.

I have

I have found the Bogs (with few exceptions) to be in a similar state of wetness. The sources from whence they are fed I shall particularize in my detailed Reports; they generally are from 20 to 40 feet deep, and the under strata are every where chequered with blue clay, gravel, and sand. Marl, in some instances, is found; but the general depths of the Bogs are such as to render the under strata of little or no importance in point of manures, as the expense of raising them would more than counterbalance the prospect of future expectation.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.
Rep. II. Mr. Longfield.

In the course of my Survey I have met with many spots of the Bogs perfectly dry and fit for immediate agricultural improvement, and some places where crops might be produced with little labour, and a prospect of a good return. My surprize was naturally excited on beholding such temptations held out by Nature, and that to a people apparently industrious. I of course inquired into the cause of such apparent and palpable neglect to their own interest, but was soon perfectly satisfied, that the want of title, and the dread of being obliged to pay for their own improvements, was a sufficient reason why those Bogs passed from father to son in the same state of nature in which they had been found many ages past. Thus the want of title, and the fear of accumulating rent, prevents the smallest spirit for improvement; whereas, if even a small portion of those uncultivated tracts were leased at a reasonable value, the spirit of emulation would instantly manifest itself amongst the tenantry: the landlord would receive rent for what now remains almost useless to the tenant, and a blank in his rent-roll, and the tenants would then chearfully improve and convert unprofitable Bogs to useful and agricultural purposes.

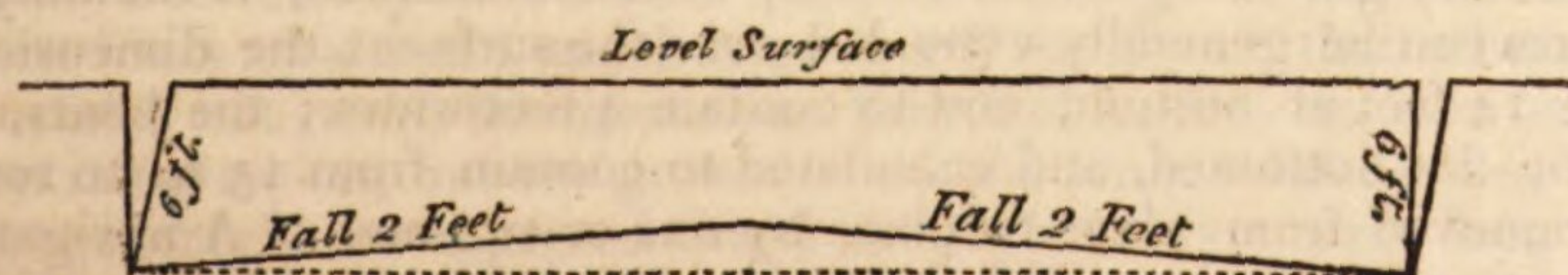
On the subject of Drains in general, various are the opinions likely to be given by the number of persons who have now that subject under consideration; for my own part, I have made up my mind and drawn my conclusion, from the Drainage already effected on different parts of the District committed to my charge, and upon the existing circumstances of the undrained tracts, which are particularly given in my detailed Reports. My Main Drains in general are laid out with from 10 to 15 feet sinking; the surface Drains which I have met with are four or five feet deep, six feet wide at top, and one foot at bottom. I would however recommend perpendicular surface Drains four feet wide and four feet deep, thus.



My reason for recommending this description of Drain, is, that I have found them to stand remarkably well, even where they have been seven feet deep, and but four feet wide, and which may be viewed any day in the Red Bog of Lettybrook. These descriptions of surface Drains are easily passed over, and they are not liable to be choaked up by sods thrown in by every passenger who thinks proper to make short cuts across those tracts. There is also another advantage in the four-feet Drains, namely, that Bog bridges formed on them are likely to stand much longer than if they were across a six-foot drain. These bridges I find to answer all the purposes of communication; and they are adopted in many places, particularly in Mr. Berry's Bog improvements at Clooneen and Galros. They are formed in the progress of making the Drains, by leaving five or six feet of the Drain uncut at proper places, through which a passage for the water is perforated, and the surface gravelled. I would therefore recommend the general adoption of those bridges on all the surface Drains, at a distance of not more than 15 or 20 perches asunder, besides one at the junction of every surface Drain with its main carrier. This great and necessary accommodation can be done without any additional expense in making the Drains.

It may seem strange to a person unacquainted with the facts, that perpendicular or walled Drains should be recommended, under an impression that the soft quagmire of which most of the Bogs are composed would collapse or close together; the fact is quite the contrary, for the sides (being perpendicular) will not retain or catch the waters falling on the surface, but will in consequence harden and become in fact a Bog wall, supported and kept together by its unbroken fibres and ties from top to bottom; whereas sloped Drains, by exposing to the weather all their broken sides, are kept continually in nearly their original state of wetness. However, it would not be safe to recommend this system for the larger description of main and tap Drains, as in the event of man or beast falling into them, it would be almost impossible to save themselves from perishing.

The surface Drains marked on the Map are laid out generally to form acute angles with the main Drains, so as to embrace the greatest fall of the natural declination, by running obliquely along the inclined plane. Where no advantage can be had by this means, and where the whole surface forms a dead level, an artificial fall must be substituted—thus



On the important subject of Manures, and the practicability of raising them from the under strata, or conveying them from the periphery into the interior of those immense tracts of Bog, much might be said; I shall however confine myself to briefly stating, what I conceive to be the most probable and effectual method of carrying into execution that most desirable object.

(5.)

EXTRACTS

*from the Appendixes to
preceding Reports.*

Rep. II. Mr. Longfield.

The different Lines of Drainage which I have the honour to submit for your consideration, will, I trust, be sufficient to reduce the surface to a state of consolidation; but we must not stop there; spontaneous vegetation cannot possibly find its way into those dreary wastes for ages, and therefore the aid of manures is indispensibly necessary. In the Black Bog and Moors, the loss of compost or manuring gravels is not so severely felt, that description producing strong ashes, by which the landholders are enabled to propagate profitable crops of rape and potatoes, &c. But as this species of manure is unattainable in the shaking Red Bogs, methods must be devised either to raise the under strata to the surface, or to convey from the exterior such gravels or manures as the surrounding country affords. This last resource, with a few exceptions, is in my opinion the most practicable, and even this cannot be carried into effect without great labour and expense. However, the magnitude of the undertaking, and the benefits likely to result from it, have induced me to take advantage of the natural capability of the country in affording means of conveying manuring gravels to the interior of the Bogs by the aid of navigable cuts, and therefore wherever gravel may be had with a supply of water to command the summit of a Bog, I have, in laying out my Main Drains, kept in view the further object of converting them into future lines of navigation for Bog purposes only; when I say for Bog purposes only, it is necessary to observe, that those proposed Cuts, being formed on different and promiscuous levels (depending on the supply of water and gravel) they cannot be converted into any general line of Canal for purposes of trade (the want of which is already supplied in this District by the present line of the Grand Canal from Tullamore to the Shannon) and therefore they are proposed to be only such as would be capable of passing manure and gravel boats of from 15 to 20 tons burthen, in consequence of which they need not be finished on a large or expensive scale.

The Bog stuff raised in excavating the navigable Drains could be converted to profitable purposes; it might be brought to the Bog edges in the boats returning for a supply of gravel, &c. and drawn from thence upon the uplands. I have seen the best crops in the country produced on light gravelly soils by this means only; and I am assured by gentlemen of respectability, that this species of manure is so valuable and certain in its effects, that it is generally used upon the uplands, not only bordering the Bogs, but frequently at a distance of half a mile or more, until the drawing of it becomes more expensive than the return would compensate for. The value of Bog stuff is further exemplified in the interior of the country, by the care with which the turf mould at the bottom of the ricks is collected and spread upon the land with a small portion of lime or clay mixed with it. This compost is even used with success in rearing garden stuff, such as cabbages, carrots, parsnips, &c. &c. and I am convinced that if the inhabitants of the country were induced, when going for the Bog stuff, to bring a load of gravel with them, they might thereby have reclaimed many hundred acres round the verge of these Bogs, which being immediately adjoining the natural taps of the country, did not require a preparation of expensive Drainage.

The erection of Locks on those deep Bogs is, in my opinion, entirely out of the question. Where it is necessary to convey the manure from a higher to a lower level, we must be content with landing-places in proper situations, by means of which a load of gravel may be transferred from the boat on the high level to the boat in the low one, which in most cases will not be found necessary, as either levels will generally commence or terminate in manuring gravels. By this means manures can be diffused over the surface at a comparative reasonable expense, when compared with that of horse work.

The quantity of surface which may thus be brought into cultivation will be great; for supposing that the operations of men with wheelbarrows, &c. cannot be extended more than forty perches from the verge of the Canal on both sides, yet the quantity brought into improvement will be 160 Irish plantation acres, equal to 240 English acres in every Irish mile of navigation; the fee of which 160 acres, at the reasonable rate of 30 shillings per acre, at 5 per cent. would amount to £. 4,800. On the presumption that the effects of the navigable Drains were confined to within 40 perches on both sides, but which can never be the case, when it is considered that their influence combined with the Surface Drains must extend much further, by means of which the gravel can be conveyed by cattle either by back loads or on sleds drawn over the pastures already formed, by the labour of men only. So that admitting the reclaiming of those unprofitable tracts was to cost even £. 20 per acre, there would remain a profit of £. 10 per acre to the improver, without taking into calculation the advantages of such improvement to the nation in general, whereby many hundred thousand acres of these almost useless plains may be reduced to pastures, thus enabling the Grazier to turn to tillage the uplands now occupied as feeding grounds.

The conveyance of gravel by Canal Drains, as recommended, is the only effectual way by which manures can be generally extended over the surface; the dimensions of them are proposed to be 14 feet at bottom, and to contain 4 feet water; the boats, as before mentioned, should be flat-bottomed, and calculated to contain from 15 to 20 tons; they would be then easily removed from place to place by one or two men. A navigation of this size, where no great surge of water would be occasioned to injure the sides, would keep in repair a considerable time; the advantages of which I calculate to outbalance any other mode whatsoever to facilitate the object, and save expense.

Roads are the only substitute that can be adopted instead of navigable Drains; the quantity of materials requisite to make them is immense, and when accomplished with great labour, they would afford but an uncertain passage, owing to the number of deep sloughs, cushes, &c. &c. through which they must be carried. Every day they would be getting worse

worse and worse, and particularly in the winter season, when they would be most requisite (labour being then easier obtained than in summer,) and after being accomplished at a heavy expense, it would be impossible to keep them in repair for more than one or two seasons during the progress of drawing gravel to the Bogs. However, their adoption in some situations is unavoidable, and therefore I have in many cases opened the communication by Roads, where a supply for a navigation was unattainable, or where it could not be effected at a moderate expense. The navigable Drains I propose are quite the contrary, and I recommend their adoption, wherever practicable or prudent, as the best and most efficient mode to reclaim those great masses of Bog. It will be necessary to make some lines of Roads from the navigable Drains to the higher parts of the Bogs; where the levels could not be conveniently carried, those collateral roads will not be required until the Bogs are prepared by Drainage; and the navigable lines opened; their completion can then be easier effected, having water carriage for the stones and gravel to their respective points of commencement. There may be occasion for a few Bridges over the navigable Drains, which can be made of Bog timber; all other passages over the Main Drains may be reserved by only perforating the bottom and leaving the surface untouched, as already alluded to in the small Surface Drains.

On the important subject of Fuel, it is really strange that apprehensions should be entertained of its diminution in the event of Drainage, and the introduction of Agriculture on the Bogs of Ireland; for it must be plain to persons of the least discernment, that the effect will be quite the contrary, and that the practicability of forming turf banks and getting at the best fuel will be increased beyond the powers of calculation; for, instead of being confined to the verges and periphery of the Bogs, the turf banks may then be formed (if necessary) in any part of the great flow, without danger of being inundated by the surface waters or the springs which now constantly prevent access to the best part of the turbary; and further, that the interior of the Bogs which now produce the very worst and lightest kind of turf, will from the effects of the Drains be reduced to such a state of consolidation, that it will in a few years afford a superior description of that necessary article. The cut-out Bogs and Moors will also be materially benefited by the proposed Drains, and the necessary taps brought up through them will also enable the turf-cutter to open again his deserted banks, which from being under water, he was forced to abandon; thus, being enabled to reach the bottom, he can (without annoyance from springs) raise his under strata, and pursue his agricultural improvements with a certain hope of a competent return for his labours.

In the course of my Reports I shall endeavour to elucidate the important subject committed to my charge. How far I shall succeed will remain for you, Gentlemen, to decide. I hope, however, to make myself understood in representing the general Topography of the District, and the various circumstances connected with and attendant on an improvement of such great national advantage; to the result of which, and as a conclusion to those general observations, I shall now beg leave to draw your attention. The effect of Drainage, and the aid of such manures as the surrounding country and under strata afford, assisted by the Skreen Planting I have recommended, will, I have every reason to think, produce upon the deep Red Bogs a good skin of grasses, particularly the Fiorin Grass, so highly recommended by Dr. Richardson.

The shallow Red Bogs, and the Black Bogs and Moors (of which there is a considerable quantity) would all be immediately brought into a state of agriculture; the chief crops to be expected, previous to laying them down for meadow and pastures, are Hemp, Rape, Potatoes and Oats, all of which would be produced in abundance.

I am induced again to repeat and recommend the importance and value of Skreen Plantations, as before adverted to; these Plantations should form the great divisions of the Red Bogs, and be at least 4 or 5 perches wide. On the ditches of the Black Bogs and Moors, planting cannot be too generally adopted, for which purpose all the ditches should be double, and at least 10 feet wide at top, so as to admit of two rows of trees.

The description of trees which I have observed to thrive best on Bogs are Fir, Deals, Alders, Birch, Sally, &c. &c. a good specimen of which may be seen at the Earl of Charleville's, Mr. Curtis's, &c.

The general observations I have the honour to submit for your consideration in the foregoing sheets, will, I trust, be found to contain matter not uninteresting to the subject of inquiry. The important circumstances attending so general and extensive an investigation, opens a wide field for professional research. I have therefore most minutely investigated the District committed to my charge, and what I have submitted you will find to be the result of a close application to the object. I have adduced nothing but plain matter of fact, without any visionary ideas whatever; and I hope it will be found, that where I have recommended improvements not heretofore conceived practicable, they are not founded upon the origin of my own imagination, but are grounded on the more solid basis of the proved experience of others; it might be expected that I should enter generally into a discussion of the causes of those extensive tracts of Bogs, and proceed to account for their origin, as also to analyze their properties; but, Gentlemen, I must confess that such an inquiry appears to me quite irrelevant to the ultimate object. The plain matter of fact is, that we find those immense tracts in an unprofitable state of nature, and our endeavours are directed to reclaim and improve them by the most efficient ways; indeed, to enter into the subject of analyzation would not only require considerable time and experiment, but would materially draw my attention from the more important objects of inquiry; I shall therefore dismiss the subject

(51)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II. Mr. Longfield.

from my thoughts, and proceed to treat particularly on the present state of the respective Bogs, and recommend such improvements as appear to me best adapted to accomplish the great object of cultivating this portion of the Bogs of Ireland.

The advancement of agricultural benefits must be admitted of high importance to mankind in general; but without health to enjoy the blessings of Providence we would find ourselves miserable in the midst of abundance. Hence we must not omit to keep in recollection, that independent of agricultural improvement, the draining the Bogs and Morasses of Ireland would in a material degree contribute to improve the climate, an object of no small importance to the health of the nation.

REP. II.—Mr. *Townsend*, on the Bogs in King's County, Westmeath and Longford, between the Inny and the Brisna, bounded on the west by the Shannon; general observations, legislative views, &c.

Mr. TOWNSEND, on the Bogs to the north of the Grand Canal, between Tullamore and the Shannon.

THE main Drain being intended as a Canal for the general advantage of the country, as well as for the particular use of the Bogs, the Locks upon it cannot so readily be dispensed with; however, the entire expense in those cases should not be considered as belonging exclusively to the Bog improvements.

Where the navigable Drains, which are intended to connect the Bogs, unavoidably pass through tillage and pasture grounds, the excavation will generally be in limestone, gravel, or clay; I therefore propose to lay out those parts to the depth of six feet sinking and upwards, so that the entire quantity which may be dug out, can be taken by boats during the progress of the work, to assist in improving the Bogs, instead of wheeling it out on each side, or making banks, except where embankments may be necessary to cross any of the small rivers: this mode of bringing gravel into the Bogs will not be much more expensive than getting it from any of the surrounding hills, and thus by degrees the communication between one Bog and another will be effected without adding to the expense of cultivation.

The marl and gravel underneath the Bog or Peat would not in general pay for the expense of off-baring and clearing it of water in the deep Bog, and it would be too inconvenient and expensive to carry it from the shallow parts in sufficient quantities for the cultivation of extensive tracts, and the small Islands or Derries should be preserved entire for erecting houses upon them; recourse must therefore be had to the adjoining lands, where a greater variety, if not better manures, are to be met with.

The navigable Drainage will for ever afford a cheap and permanent conveyance to and from every portion of Bog, both for the present and future improvements; will also supply the entire surface with water for agricultural purposes; will drain the Bog effectually; and enable the farmer to carry, at a cheap rate, the produce of this new cultivation, on the Canals, into remote districts of the country, that stand in need of supplies of corn, &c. &c.

The system of Drainage which I humbly submit to the consideration of the Commissioners, will answer all descriptions of Bog, whether deep or shallow, the depth of the Bog or Peat is of no consequence in determining where they are to be made, as they are intended to suit the level of the surface; nor do I conceive it at all necessary to sink the Drains to the full depth of the Bog, with an intention of drawing or tapping the water from it, because (excepting a few feet near the surface) the great mass of Bog or Peat is a substance which is impervious to water; in some cases, where it is all hard black Peat, I have seen the turf-cutters sink from the surface to the gravel, without being in the least incommoded with water; and some of the pits which were not entirely sunk to the gravel, have remained perfectly dry for many weeks or months, if the rain water did not fall into them.

There are layers or strata of this description, more or less, in every Bog; and I am decidedly of opinion, that the springs under the Bog do not penetrate upwards through this substance, except where there are clefts or openings, but that the wetness of the Bogs is caused by the rain water, &c. falling on the surface, and lodging in the small cracks and indentures; and in the spongy texture of the surface, moss and other vegetation, which varies in depth according to its nature and quality, these retain the rain water until it is exhaled by the atmosphere, or slowly drained by the natural descent of the surface.

The deciduous parts of the annual vegetation, decayed fibres, &c. &c. adds to the mass of Peat, and perhaps in its decomposition affords nutriment (together with the rain water) to the next succeeding growth.

That description of moss which retains most rain water, has the quickest growth; hence we often find the softest parts of the Bogs in the most elevated places, and in many instances even higher than the surrounding lands; and, on the contrary, hard firm Bog on the lowest levels, which I think is a convincing proof that springs or rivers are not a principal cause of the fluidity of Bogs, but rather that they do not ascend into it at all.

As a further corroboration, it frequently happens that considerable tracts of Bog have their case much above the level of the natural outlets; so that it is probable any springs which

which may be underneath the peat, would percolate through the sand or other porous strata, or the interstices of rock, until it vented into the adjacent rivers.

In other cases several springs may unite, and form subterraneous small streams between the Peat and the substratum on which it rests, and in this manner they are conveyed along to a natural issue.

The continual action of air and water along these small passages, may by degrees have undermined a few places where the Peat is least fibrous or pulpy, and increasing gradually until the cavity is so large that the superincumbent weight gives way to the surface, forms the gullies or swallow holes that are to be met with in various parts of the Bogs.

After rains there are small streams formed on the Bogs, which, in pursuing their course, sometimes sink and re-appear many perches distant. This is a further instance of the staunchness of peat; because these subterraneous rivers do not always pass through to the gravel, as the water would then get a vent, and totally disappear if the substratum was of an open or porous nature; they are a kind of small tunnels perforated to a certain extent, but wholly within the mass or body of Peat; the water being thus conveyed as it were through a cylinder of Bog, discharges the same quantity at the lower end that entered in at the upper; whereas if the great body of Bog partook of the nature of sponge, the stream could not be traced to where it re-appears, as it would be diffused through and lost in the mass of peat.

It may be inferred from these premises, that small Drains, with levelling and trimming the surface, will completely answer all the purposes of drainage; and the immense saving of expense, time and risk in execution, together with the advantages to be gained by preventing obstruction and inconvenience to the general intercourse and communication, will make them preferable, beyond comparison, to deep ones; but as it is necessary to combine the mode of cultivation with the plan of drainage, to accomplish an effectual improvement of Bog, it is highly expedient that they should all be navigable, to answer every purpose.

Annexed is an Estimate of all the Drains within the Bogs, exclusive of the connecting Drains in the grounds between them, as the gravel from those parts is intended to be brought in to assist in cultivation, as before mentioned.

The total amount of the expense of a navigable Drainage, £.63,435. 7. 1½.; the quantity of Bog, exclusive of Derries or Islands, 21,075 acres 1 rood 8 perches, Irish; which makes the average expense £.3. 0. 2. per acre.

The expense of Locks Bridges and Culverts on the main Drains, with inclined planes on the collateral Cuts, and forming a junction both with the Grand Canal and the River Shannon, amounts to £.18,530, which will make an average of 17s. 7d. per acre, on 21,087 acres 1 rood 34 perches.

If Locks were to be built on the collateral Cuts, instead of inclined planes, they would add to the above sum £. 8,000, of which £.3,300 is on Ballymaglavey Bog, making an average of 7s. 7d. per acre.

On the mode of culture which may be best adopted for reclaiming and improving the Bogs, there are variety of opinions; it is a subject on which I with diffidence offer any remarks; the cheapest mode, and that which will quickest turn to profit, I should suppose will have the preference.

The great objects apparently necessary are to destroy the vegetative power of the moss, heath, &c. and to procure proper manures for creating vegetation of a more beneficial and useful quality, on the easiest terms.

Draining will check the progress, but not entirely destroy the heath, moss, &c. without its being also dug to a certain depth; and when once the surface is turned over, it is usual to burn the top sod, to produce a manure; a repetition of this mode will in time have the desired effect in annihilating the moss, &c. but the crops will be light compared with good arable land, and if the process is discontinued and no further aid procured, it will then remain in a state similar to cut-away Bog.

Where the cultivation on a soft red Bog is partially done, practised only for a few years, and finally neglected, previous to the fibres of the growing moss being totally decayed, it will revive and force its way through the weak and tender grass, so that in a few years more the Bog will resume nearly its original state and appearance, particularly if the small Drains are not kept open. I have observed this to be the case with several small patches that have been taken in and let out again.

Another way of destroying the moss, &c. is to lay on a covering of manuring, or limestone gravel, after the surface is levelled and trimmed sufficient to keep the moss under until the fibres are decayed; this mode will also materially assist in keeping the Bog dry, because the weight will in a slight measure compress the spongy surface, so that it will not soak the water with the same facility; add to which the gravel will cement, and prevent much of the rain water from penetrating, by warding it off and discharging it into the Drains.

Some persons imagine that gravel will sink through the Bog; however, the idea does not seem to be altogether well founded, for we see Roads over Bogs that require little more repairs, if kept dry, than the ordinary stint of any other roads; whereas if the gravel sunk in the manner supposed, these roads could not be made passable, or would require a continual accession of gravel to keep them in order; this does not seem necessary even where there is

(5.)

EXTRACTS

from the Appendices to
preceding Reports.

Rep. II.

Mr. Townshend.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II.
Mr. Townshend.

an incessant rolling of carriages, cars, &c. in very old roads, that have been a long time deserted, the gravel still remains on the surface, and the moss, &c. has given way to a beautiful verdure, although the gravel, probably, was not nicely selected.

The gravel will be a lasting aid to the new vegetation; will also give proper stamina to the Bog for the growth of timber of every description (in fact, it appears that timber cannot be matured without it on Bogs;) every repetition, if spread equally on the surface, will add to the firmness of the Bogs and luxuriance of the crops, and the Farmer will be repaid, for his expense and trouble, from the renovation of the soil.

The whole of this District abounds in limestone gravel, very fit for manuring and fertilizing the Bogs; and the navigable Drains herein proposed, will afford the easiest conveyance possible. They are in many instances directed to the foot of a steep gravel hill of from 50 to 80 feet in height, and of an inferior quality of ground, in order that a sufficiency may be procured with the least injury to the adjoining lands that the nature of the business will admit of; one acre of a gravel hill 50 feet in height, will cover 600 acres of Bog one inch thick, and so in proportion.

Taking the gravel hills at an average of only 30 feet in height, which is a low calculation, the one acre will cover 360 acres of Bog, one inch thick; and supposing the broken ground to be afterwards totally useless, the purchase of an acre, I think could not exceed £. 36, this will amount to two shillings per acre, on the surface of the Bog, for damages to the grounds from whence the limestone gravel is to be procured.

The plan which I beg leave to recommend for bringing the gravel into the Bogs is, to have flat-bottomed boats with a platform even with the gunwale, and a double railway upon it, calculated for two rows of waggons or carriages, to be constructed for the purpose, and over this, if necessary, another platform may be erected with a single railway upon it, leaving sufficient headway for the lower tier.

A short cast-iron railway to be laid on the ground, between the gravel hill and the boat, for the waggons to run on, and when as many are placed upon the boat as the railway on the platform will contain, two men will take the boat along the Drains into the Bog, and there to have another railway not exceeding 40 perches (280 yards,) to run the waggons from the boat to any part of the surface, then to fill them and return with them emptied, and soon as they are all replaced on the boat, to return with it to the gravel hill, and repeat their operations.

I am also of opinion, that cast-iron railways and waggons could be very advantageously used along the exterior edges of the Bog, where gravel hills are convenient, and also in the small detached Bogs and places that cannot be accommodated with a navigable Drainage and boats.

The facility with which gravel can at any time be brought in by boats, renders it unnecessary to lay on more in the first instance than is really required to produce one crop; then to go on progressively, increasing the quantity with each succeeding crop, until the Bogs are gravelled completely to any thickness; and they will become profitable from the first commencement of the business, instead of having to wait for the full quota of gravel before the crops are put down, and will not require so large a sum to be laid out on the first onset.

I have calculated for one inch only of gravel, as being sufficient to produce a succession of crops, but not for a permanency; the quantity per acre will be nearly 218 cubic yards, and at the rate of sixpence per yard, for excavating and removing by boats, will amount to £. 5. 9. 0. per acre.

The value of the Bog, when drained and gravelled, providing it be properly done, will be nearly equal to the adjoining lands, and these in general may be averaged at upwards of two guineas per acre per annum; the Bogs therefore, when improved in the manner before-mentioned, with the advantages also of a canal conveyance to every part, I think may fairly be estimated worth thirty shillings per acre, yearly value, at the least.

The aggregate expense of draining and improving all the Bogs in this district, including navigable Drains, and opening a communication with the neighbouring country, will be as follows; viz.

	£.	s.	d.	
The navigable Drains	-	-	-	3 0 2
Masonry on D ^o with inclined planes on the collateral Cuts,	0	17	7	
Gravelling on the Bogs one inch deep	-	-	-	5 9 0
Damages to lands	-	-	-	0 2 0
	£. 9	8	9	per Irish acre,
Which is equal to	£. 5	16	5½	per English acre.

When once the Drains are made in the manner before-mentioned, any future improvements on extensive tracts of Bog, can be done much cheaper than by any other plan; and those persons who undertake to reclaim and cultivate them, may very well afford to pay, by an acreable rent, for the convenience of navigation, from which they will receive so much benefit.

The

The country will also derive great advantages from this extension of Canals, and ought to contribute towards it by a small toll upon such articles as may be conveyed upon it, that are not immediately connected with the cultivation of the Bogs.

Without a general union of interests, either by consent of parties or under the authority of an Act of Parliament, with a Board to conduct the execution of it, the scheme could not be carried into effect by the Proprietors of Estates adjoining, with any prospect of success or remuneration, as in many instances the property is undivided; some might be willing, and others unwilling or unable, to engage in such speculations; the grounds which might have great extent of Bogs attached to them, could not furnish the proper manures; others again who have little or even no Bogs, may have abundance of manures; those who might be disposed to improve, could not make the proper drains, roads or other conveniences, unless the next proprietor would also extend them through another estate.

In some cases the peculiar tenure of the estates may prevent the present possessors from laying out money on such improvements, or even to give encouragement to others by offering proper assistance and leases for a long term of years, and numerous other obstacles which cannot be foreseen might occur, so as to render a partial attempt at improvement unsuccessful; and until there have been a number of beneficial experiments made, very few individuals will run the risk of encountering the difficulty, although there can be no doubt of the result answering the most sanguine expectations.

Gentlemen,

I have the honour to be,

Your most obedient and humble Servant,

Thomas Townsend.

Balna Craig,
26 February 1811.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II.
Mr. Townshend.

REP. II.—Mr. Edgeworth, on the Bogs surrounding Edgeworth town, bounded on the north by the Camlin and on the south by the Inny; general view of the subject; analyses, &c.; wonderful convulsion of the Bog of Rhine, &c.; Mr. Edgeworth's machines for unloading boats, taking sections of rivers, portable railways, with his description and application of the same.

Mr. EDGEWORTH, on the District surrounding Edgeworth town.

WHEN I undertook the Survey of District No. 7, under the Commissioners for the improvement of the Bogs of Ireland, I had no very sanguine hopes that the result would enable me to recommend to the Board any extensive measure for their consideration. I mentioned my doubts to some of its members, who encouraged me by the reasonable motive of being able, at no great expense, to satisfy the Board and the Public decidedly either in favour of the project, or to adduce such facts and arguments as would put the scheme, as to this District, completely out of their view for ever.

First view of the
Project.

I have been taught, by the common reports current in the country, that the greatest part of the Bogs on the borders of the Inny were lower than the surface of that River. I had been assured that the River itself flowed upon Bog of a depth that had hitherto been unfathomable; that various attempts had been made by the owners of these Bogs to drain and reclaim them; and that all their attempts had been totally abortive.

Unfavourable reports
concerning the Project.

It gives me great satisfaction, however, to have it in my power to contradict these opinions; and I am happy in being enabled to assure the Board, that the experience of every succeeding week has at once strengthened my hopes and increased my belief in the practicability of making these Bogs useful land.

Prejudices against the
Project soon removed.

I had feared that a prejudice which prevailed against the scheme of reclaiming large tracts of Bog would embarrass my proceedings; but this prejudice soon vanished when the people were informed of the real intentions of the Commissioners; and when they were assured, that such Bog as could be necessary for Turbary would not be meddled with in any other manner than to assist in making it better for fuel.

This District forms a considerable part of a large circular bason, surrounded by hills, that rise in the counties of Leitrim, Longford, Cavan, Westmeath, and Roscommon: it is probable, that these hills and the vallies between them, were covered formerly with trees; and from the remains and exuviae of these Woods, the Bogs, which at present exist, have gradually been formed, fresh vegetation adding to the original morass.

General Survey and
Map.

Whether these morasses were at first formed by the destruction of whole forests, or merely by the stagnation of water in places where its current was choked by the fall of a few trees, and by accumulations of branches and leaves, carried down from the surrounding hills, is a question that cannot now be determined.

Professor Davy is of opinion, that in many places where forests had grown undisturbed, the trees on the outside of the woods grew stronger than the rest, from their exposure to the air and sun; and that when mankind attempted to establish themselves near these forests, they cut down the large trees on their borders, which opened the internal part, where the trees were weak and slender, to the influence of the wind, which as is commonly to be seen in such circumstances, had immediate power to sweep down the whole of the internal part of the forest. The large timber obstructed the passage of vegetable recrement, and of earth

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.
Rep. II.
Mr. Edgeworth.

earth falling toward the rivers ; the weak timber in the internal part of the forest, after it had fallen, soon decayed, and became the food of future vegetation.

Mr. Kirwan observes, that wherever trees are found in Bogs, though the wood may be perfectly sound, the bark of the timber has uniformly disappeared, and the decomposition of this bark forms a considerable part of the nutritive substance of Morasses; notwithstanding this circumstance, Tannin is not to be obtained in analysing Bogs ; their antiseptic quality is however indisputable, for animal and vegetable substances are frequently found at a great depth in Bogs, without their seeming to have suffered any decay ; those substances cannot have been deposited in them at a very remote period, because their form and texture is such as were common a few centuries ago.

In 1786 there were found, seventeen feet below the surface of a Bog in my district, a woollen coat of coarse but even net-work, exactly in the form of what is now called a *Spencer*. It fitted me as well as if it had been made by a modern tailor. A razor, with a wooden handle, some iron heads of arrows, and large wooden bowls, some only half made, were also found, with the remains of turning tools ; these were obviously the wreck of a workshop which was probably situate on the borders of a forest.—The Coat was presented by me to the Antiquarian Society.—These circumstances countenance the supposition that the encroachments of men upon forests destroyed the first barriers against the force of the wind, and that afterwards, according to Professor Davy's suggestion, the trees of weaker growth, which had not room to expand, or air and sunshine to promote their increase, soon gave way to the elements.

Whatever may have been the cause of these Bogs, their texture is in this District very uniform.—The Bog becoming of course denser in proportion to its depth, and the colour and quality of its ashes becoming different at different depths.—With us, I have found but little manure in any Ashes, except in such as are yellow ; Professor Davy informs me that there is a species of white Ashes, containing gypsum, which may be found in Peat-moss, and that these Ashes are of great value to the farmer.

The sub-stratum of the whole of District No. 7, is calcareous in the form of Limestone, Limestone gravel, blue marly Clay, and very pure Marl.

The component parts of the blue Limestone Clay that is found under the Bog near the Inny are as follow ; (this bed of Clay is more than ten feet thick next the banks of that River) :—

	Gr.	
Carbonate of Lime	44 4	} 100 Grains.
Carbonate of Magnesia	1 4	
Alumine	27 2	
Silex	27 0	
	100	

White Marl found under the Bog near the Inny, opposite Cooline, in a bed extending under the River, and in most places above Ten feet thick ;

	Gr.	
Carbonate of Lime	87 3	} 100 Grains.
Vegetable matter, or Bog-stuff	10 7	
Alumine	1 0	
Silex	0 9	
Oxyd of Iron	0 1	
	100	

Blue Clay found under the Bog near the Shannon, in a stratum of about 3 feet in thickness ;

	Gr.	
Carbonate of Lime	53 0	} 100 Grains.
Alumine	36 0	
Silex	11 0	
	100	

The Limestone-gravel has the plainest indications of having been fragments of Rock reduced to the globular form of pebbles by the motion of water ; and in the greatest part of them, the marly Clay had probably been superinduced over the Rock and Gravel before the formation of the Bogs. Its softness arises from its having been long covered with water, which by the intervention of small pebbles had mixed itself with the Clay, and had rendered it easily plastic ; depositions from the recrements of Vegetables have no doubt been added. To enter into a chemical analysis of the small portions of these different substances seems foreign to my present purpose, which is to give such practical and practicable means as may be made use of to bring the Bogs of this District into immediate and profitable cultivation. It is sufficient to point out, that the form of the Country, and the situation of its Rivers, gives us reason to suppose, that the formation of its Bogs has arisen from the accidental obstructions of those channels by which any animal substances are carried to the Ocean.

Convulsion of the
Earth at Rine.

There is nothing further remarkable on the River Camlin, except the effects of an extraordinary convulsion of the Bog of Rine (or Killoe) which took place near the Bridge of Rine. In the night of the 16th December 1809, during a thunder-storm, about 20 acres of the Bog burst asunder in numerous places, leaving chasms of many perches in length, and of various breadths, from ten feet to three inches ; the rifts were in general parallel to the River, but in some places the smaller rifts were at right angles to it ; not only the Bog, but the

the bed of the River was forced upward; the boggy bottom filling up the channel of the River, and rising three or four feet above its former banks: in a few hours one hundred and seventy acres of land were by these means overflowed, and they continued in that state for many months, till the bed of the River was cleared by much labour and at considerable expense.

I repaired to the spot shortly after the event, and I examined it with great care, without being able to assign an adequate cause for what had happened.

As the Bog of Rine lies in my District, I thought proper to bestow some pains in ascertaining all the circumstances of this phenomenon. I took the levels of the Bog to discover whether it had sunk partially in any considerable degree.

I bored it in a great number of places, to make myself acquainted with the texture of the Bog, and with the nature of the sub-strata on which it lies, and to discover whether any large chasm or cavern could be found, into which the water of the Bog might have sunk; for the Bog, which had been uncommonly wet, soon became drier than any other Bog in the country. The water, however, which was found in all the rifts at three feet from the surface, continued to remain at that depth with little variation; and even since a passage has been opened, and that all the flooded meadows have become dry, the water still remains in the bottom of the chasms.

Various causes have been assigned for this phenomenon; the most obvious is that the Bog had been undermined by rains, or by the swelling of the River, or by water descending under the Bog from the neighbouring rising grounds, and that in consequence the whole Bog slid toward the River, breaking into chasms or rifts from the resistance which it met with in passing over hard and irregular ground at the bottom of the Bog; it was also suggested that a large chasm had been suddenly formed underneath the Bog, by the falling in of a subterranean vault, and that this chasm had swallowed part of the Bog, and had, by the undulation occasioned in its fall, forced up the bottom of the River, and broke the Bog into the rifts which appear upon its surface; but no such chasms or cavern could be discovered, and the Bog had not sunk in any particular place.

To account for this phenomenon, other persons suppose that there had been a slight shock of an earthquake; this idea generally prevailed among the people on the spot, and this opinion is not contrary to experience; partial earthquakes have occurred in various parts of the world, which have happened at the same time that violent earthquakes or eruptions of volcanoes took place at great distances.

As for instance, in England, in 1755, a pond in the Town of Luton in Bedfordshire, in which there had been but little water for some weeks, suddenly filled, and a copious sediment was thrown up from the bottom at the precise time of the earthquake at Lisbon, the water continuing to overflow for some hours, and then all remaining quiet as usual.

Last September the same pond in Luton began to overflow suddenly, which created alarm in the minds of the inhabitants, who apprehended that this circumstance was the indication of some earthquake on the Continent; this was afterwards known to have been actually the case.

It is remarkable that several earthquakes were felt about the sixteenth of December 1809, in distant countries, when the phenomenon, of which I have given an account, happened at Rine in the county of Longford; and though the distance between the places where they occurred and Ireland, is so very great as to make it improbable, it is not absolutely impossible that a communication may exist between them.

MR. EDGEWORTH on the Bogs surrounding Edgeworth Town.

I have carefully examined many places where former attempts had been made to improve red Bog, particularly in Bogs No. 1, and No. 9, as may be seen in Appendix No. 5. Drains of six or seven feet wide, and as many feet deep, had been made from the centre of the Bog to the streams that separate it from dry land; these were about twenty perches asunder, and though they had been made upwards of twenty years ago, the land between them was not in any respect different from what had not been drained. In (the float Bog) No. 2, two large Drains had been made fifty years ago to enclose a road. They are at present open, and only thirty-two feet distant from each other; but the ground which had been marked out for a road between these ditches remains nearly in the same state as the Bog on each side of it; excepting indeed the narrow banks formed by the stuff thrown out of the Drains; this stuff, whether from its becoming drier, or from its exposure to the air, certainly in all cases, where it is turned up, does become more capable of supporting vegetation than it was in its former state. I learn, therefore, from experiments made long ago, and from what has repeatedly passed before my eyes, that the improvement of these Bogs does not require many or deep Drains.* I have lately received from Mr. Edward Wakefield a strong corroboration of this opinion. He informs me, that a gentleman of much respectability, after having literally sunk Ten thousand Pounds in draining one part of a Bog, has since succeeded in improving another part of the same Bog at a small expense, by Surface-Draining. I think it will not be improper in this place to mention an improvement which I made upon part of a Bog of my own, about twenty-five years ago. The Bog and Moor consisted of twenty-seven acres. It was on the borders of my own Turf Bog, and part of it had been partially cut away, but

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II.
Mr. Edgeworth.

Causes of the Con-
vulsion in the Bog of
Rine conjectured.

Conjectures on the
causes of this Pheno-
menon.

Instances of the in-
efficacy of mere drain-
ing.

Stuff thrown out of
Drains, more fertile
than other parts of the
Bog.

Reasons against deep
draining.

Mr. Wakefield.
Fact furnished by him.

Account of an Im-
provement on a Bog of
Mr. Edgeworth's with-
out deep draining.

* Eaton on Bogs.

(5.)

EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II.
Mr. Edgeworth.

there were still four or five feet of turf above whiteish sterile clay; I inclosed it with a seven-foot ditch, cut down to the white clay, where it was necessary to preserve a fall for the water; but in other places the ditch was not cut to the bottom of the Bog, only a few slight Surface-Drains of small dimensions were cut in proper places. The Bog, which as the summer was dry, could bear cattle, was ploughed with a skinning plough, and the stuff that had been turned up was burned, yielding a large quantity of red ashes; a coat of Limestone Gravel of an inch and an half in thickness was spread on one third of this ground; another third was covered with quick-lime; and the remaining third with marle, which was brought from the distance of a quarter of a mile; with respect to the quantity of each of these materials, I followed no other rule than to limit the expense to what the Limestone Gravel on the first portion of Bog had cost, knowing that the worth of every improvement is to be determined by comparing the produce with the money expended. The experiment succeeded far beyond my hopes; no material difference appeared in the returns made by these three portions of Bog during five years, whilst it remained in my hands.

At the commencement of the business, a tenant to whom I had let the neighbouring land, declined to take this Farm at half-a-guinea per acre; I took it into my own hands; and I accounted regularly with my agent for that rent yearly. I never had one hundred pounds capital employed; and by an accurate account now in my possession, it appears, that after having my capital reimbursed, and after the payment of rent and every contingent expense, including wear and tear of instruments of husbandry, and of overseer's wages, I had at the end of five years gained seventeen pounds clear profit; and at that period, when the land was in Meadow, I let it to the farmer who had before refused it at half-a-guinea, at the rent of Thirty shillings per acre, on a lease for his own life.—It is now worth double that rent. This experiment is not related as evidence of the success of Surface-Draining, but as a proof that marle, limestone-gravel, or lime, if applied in proper quantities are nearly of equal use.

Improvement made
by Bishop of Kildare.

The most judicious mode of improvement of Bog, that I have ever met with, is clearly and ably described in a Note to Mr. Griffith's Report, which I saw when mine was nearly transcribed. Here the hard bottom of the Bog was at the greatest depth only twenty-two feet below the surface. The Bishop of Kildare who directed this improvement wisely dug to the bottom, because the expense was not too great in this instance; but where Bogs are from forty to forty-seven feet deep, the cost could never be repaired by any mode of treatment with which I am acquainted.

Form of Drains laid
down in Map No. 1.

As to the forms of the few Drains which are laid down in the Map, No. 1, I propose that they should be made with perpendicular sides, which I prefer to those which are made either with a considerable talus, or in steps; I once thought the latter mode the best, but from observations made on common Turf-Bogs, and from reasoning on the subject, I have changed my opinion.

Sole or bottom should
be an inverted Arch.
See Fig. 4.

The sides of Bog-Holes, as they are called, where turf (or peat) has been cut, are always perpendicular, and unless water lodges at the bottom of the holes, and melts away the foundation of the Bank, it seldom gives way. All Drains (except Canals) in Bogs I would make narrow, viz. 5 feet by 3, to save expense; to secure the bottom of these Drains, and to preserve the water in a narrow channel, I propose to make the sole of the Drain an inverted arch, as represented (Fig. 4.) in the annexed plate.

Deep Drains.
Though Mr. E. dis-
approves of them, he
adds hints to make them
more useful.

Though I disapprove of making large and deep Drains in my District, yet it may be proper for me here to communicate to the Board some observations upon this subject, which may be useful in other Districts where Canals or deep Drains are deemed advisable.

Pumps to be worked
by Windmills.

In the first place, there are some situations where there are depositions of water lower in particular places than the general level of proposed Canals, and lower than the neighbouring Rivers; in such places pumps may be sunk, which may be worked by such windmills as are used in the fens in Lincolnshire.

Coffre-dams or Caisons.

Archimedes' Water-
screw. See Appendix,
No. 3.

In the next place, there are in some Bogs depôts of Marle, where that manure is not to be found in the vicinity; in these situations the most certain, and, in the end, the cheapest, method, is to form a Coffre-dam or Caisson of large extent; pointed planks driven through the Bog to the hard bottom will be sufficient, if placed circularly to support the Bog-stuff on the outside, whilst the workmen are removing the stuff within; after the excavation has been made, the whole must be puddled, and kept free from water by an Archimedes Water-Screw, and a Windmill, as described in Appendix, No. 3.

Such a machine may also be advantageously employed in raising Marle or Soft Limestone Clay from the bottoms of Rivers, where they happen to abound; in such situations the Windmills and Screw-pumps, as they are popularly called, must be erected upon floats in the River, and the Screw-pumps must be placed at an angle not exceeding twenty-five degrees.

They will then, if properly made, raise semi-fluid materials with certainty. In this way of working to raise Marle there will be a considerable waste of power from friction; but the power of the wind is so great, where it can be applied safely, and where continuity of work is not required, that small mechanical resistance from friction is easily overcome. I am aware that the wind is not an economic power; that all machinery that has been hitherto exposed to its influence is liable to frequent accidents and to expensive repairs; and the force employed always bears but a small proportion to the bulk and cost of the organ.

Therefore

Therefore good Mechanics are not disposed to call it into use, except in particular situations. Not having ever seen Steam Engines worked by Turf, I cannot recommend their use in draining or irrigating Bogs; but it is probable that they may be employed with advantage. In the last place, with respect to Drains in Bogs, it will be necessary to have frequent Bridges or Passages from one part of the Bog to another. These Passages may be left untouched in cutting the Drains, and by scooping out the earth underneath them, small shores may be made for the water from one part of the Drains to the other, so that in fact, where the size of the Drains makes it worth while to do so, half the cutting of these Drains may be spared, because half the surface may be left for the Passages.

Small shores and bridges left over them.

How far it may be useful to make subterranean passages to drain Bogs, I have not had sufficient opportunity to determine, but I have made some experiments on this subject with an instrument, which I call a Seton-plough. This instrument is described in Appendix, N^o 3.

Seton-plough. See Appendix, No. 3.

Besides the use of Canals and wide Trenches for draining Bogs, it is proposed by some Engineers to employ Canals as the means of transporting Clay, Limestone-Gravel or other earths or manures over the whole surface of a Bog; it is obvious that this must be done either with or without the intervention of wheelbarrows. In the latter case the Canals must be so near each other as to permit the stuff that is emptied from the boats to be immediately spread with a shovel: in the former, the load must be first emptied on the banks of the Canal, and afterwards be thrown into wheelbarrows, thus requiring to be raised twice, which will occasion double cost in a most material article of expense. Though in this district such a proceeding is not advisable, it may be practised perhaps elsewhere; and to facilitate putting out clay by boats I have described in Appendix No. 2, a Machine which I used in 1772 on the Rhone. Where this system of Canals is adopted I should recommend wooden locks instead of stone; I would make them narrow, and frame them so as to be easily removable from place to place.

Canals for transport of Clay, Manure, &c. Canals for transport of Clay, Gravel, &c.

Not advisable in District No. 7.

But where such Canals are advisable, a machine for loading may be useful. See Appendix, No. 2.

Wooden Locks recommended instead of stone.

Having thus presumed to give a decided opinion against cutting large Canals in the Bogs in my District, either for the purpose of Drainage or of carriage of Manure, I shall proceed to point out the means which I would pursue in attempting to reclaim a large portion of Bog.

I would in the first place cut off all the springs and sloughs by appropriate Drains, and then, whenever a Bog, as at No. 8, is covered with thin heath or weak plants of any other sort, I should endeavour in the first place to burn off the rough surface in a dry summer, merely by setting fire to the heath, and permitting the fire to spread itself wherever it could meet with fuel. In other Bogs where the roots of plants are strong and deeply sunk under the surface, I would immediately proceed to turn up the whole of the Bog with a long loy, a tool which is common in the western part of Ireland; besides which I should require grubbing-tools.

Means proposed by Mr. E. for improving Bogs.

As I advanced I would cut narrow Drains of eighteen inches deep, with narrow Essex draining-tools, wherever water lodged on the surface; and Drains of fit dimensions wherever springs occurred which I had not previously discovered.

The thick tough surface of the Bog should be piled up in ridges to dry, and where the Turf so dried yielded Ashes that contained Manure, as much of it as is possible should be burned in the rows as they stand, to save the expense of making it into heaps; what remains unburned after this attempt should be collected in heaps and burned to ashes. The next operation is to put out some kind of Clay upon the ashes after they have been spread, taking care soon to cover them with earth, to prevent them from being blown away.

Burning the surface of Bogs.

I propose for this purpose to employ wooden portable Railways, shod with iron; upon these portable Railways appropriate carriages are to be employed; these are made to empty at either side of the Railway, and when loaded with half a ton of earth, one of them can be easily pushed forward by one man. I had the honour of showing these Railways to several of my friends, in 1787, at the house of Mr. Foster, who was then Speaker of the House of Commons of Ireland. The advantages proposed by this construction were to extend the use of Railways to temporary purposes, and to reduce the expenses considerably, by dividing into several parts the weight which is usually loaded on one carriage, so that the Railway might be reduced in weight and cost, without being more liable to break than those that are in common use.

Portable wooden railways recommended.

Have been tried.

This plan has since been successfully adopted in many places, particularly at Penrhyn Slate Quarry, where a number of small carriages, loaded lightly, supply the place of one larger carriage; by these means, iron Railways may be made sufficiently strong, though not one fourth part of the weight or cost of ordinary Railways.

A number of small Carriages to be used on railways instead of large Carriages.

I propose that these portable Railways should be supported on piles of five or six feet long, driven into the Bog, and that they should be removed from place to place, so that after a series of Railways had been laid, to the distance of half a mile, for instance; and after the carriage had emptied its loads on each side of it, the Railway may be detached, and placed at the distance of two perches, parallel to its former situation; these Railways are described, and an estimate given of their cost in Appendix, No. 4. It will thence appear, that the share per acre of the capital of £.500, expended on the Railways and Carriages, would, on 1,200 acres, amount to about five shillings per acre; wear and tear about three shillings more; spreading, gravelling, and removing machines, about ten shillings. This estimate

Mr. E's railways to be supported in Bogs on piles driven into Bog.

Portable rail-ways recommended and Estimate of their Expence given, Appendix, No. 4.

(5.)

EXTRACTS

from the Appendixes to
preceding Reports.

Expense of reclaim-
ing a Bog by putting
out Clay with portable
railways for one acre.

estimate is made on the supposition that the Machines and Railways would last four or five years, the time necessary for completing the improvement of 1,200 acres, so as to make the land worth 30 shillings per acre; the expense of the whole per acre would be nearly as follows :

	£.	s.	d.
Wear and tear, and share of capital, per acre	-	—	8 —
Draining - - - - -	-	—	10 —
Turning up surface - - - - -	-	2	13 —
Digging and filling Clay, &c. - - - - -	-	2	13 —
Carrying out Clay on moveable Railways - - - - -	-	1	14 —
Spreading Clay and shifting the Railway - - - - -	-	—	10 —
Damages for Gravel-pit - - - - -	-	—	7 —
	Irish	£. 8	15 —

(Equal to £. 5 English per English acre.)

Estimate of ditto for
whole District, No. 7.

To improve the Bogs of the whole District, viz. 21,367 Irish acres, would, according to this estimate, cos £. 181,619 Irish, equal to £. 167,648 English, for 34,569 English acres; thus a permanent income of nearly Thirty thousand Pounds English could be obtained at less than six years purchase.

Value of Bog im-
proved by putting out
Clay.

I consider the plan that is here recommended as the first stage of improvement; and I believe that it would make the Bog worth Five and Twenty and Thirty Shillings per acre.

Reclaimed Bog may
be further improved at
small expense.

Substantial and intelligent Farmers would for half as much more double its value; poor Tenants, if they are allowed to have more than a Garden, and as much Land as will support a Cow, with grass and hay, would soon wear out what had been done. Reclaimed Bog must be continually attended to; and if red Ashes are to be found below the surface, and Lime in any form be within reach, the Bog may be made worth Four Pounds per acre.

The above estimate
may appear too low.

Estimates generally
fall short.

I have stated, that the first stage of improvement of a Bog, which is in fact by far the most difficult of any other, may be accomplished for £. 8. 15. Irish per Irish acre, equal to £. 5 English per English acre; I am well aware that this appears to be a very low charge, and not unlike those estimates which sanguine or interested Engineers hold out to induce the Public to pursue some favourite scheme of the Projector: But what is here laid down is taken from the common prices of work, and from repeated experience of the machinery that is to be employed. Wherever I have been consulted as an Engineer I have never been unwilling to undertake the work in question, according to my own estimate, with a reasonable addition to cover accidents, and to give an adequate compensation for my trouble, and for the interest of the money which must be advanced. I should therefore stipulate for one third more than my estimate, were I to undertake the improvement of any considerable quantity of Bog.

To those who are conversant with large undertakings, this will appear no unreasonable security against the losses and disappointments that never fail to occur in carrying on the best concerted projects. Few great Buildings, Docks, Fortifications, or Canals, are executed for less than double the original estimate.

Something new or unforeseen happens, some alterations of the plan, or deficiency of the materials, is discovered; and when the work has advanced for some time, it is found better to complete it at an increased expense than to abandon it altogether.

Offer to improve a
thousand acres of Bog.

As I never was more thoroughly convinced of the feasibility of any project than of that upon which I now offer my opinion, I hold myself ready to undertake the reclaiming One thousand Irish acres of a Bog of middling quality; that is to say, between what is most easy and what is most difficult, in this District, for Eleven thousand six hundred Pounds Irish, which is one-third more than the amount of the foregoing estimate; at the same rate 1,000 English acres would cost £. 7,800 English; if a considerable number of acres of Bog were thus undertaken by persons who could give good security for the performance of their contracts, the improvement of the Bogs of Ireland would of course gradually follow.

Planting Bogs.

Many Bogs after they have been drained to a certain degree are capable of being planted, without any further care than to dig up and break the surface round each plant; wherever water settles after the trees are planted, it must of course be drawn off. One of the surest indications of the fitness of any Bog for a plantation, is the flourishing appearance of the plants already growing in or near the Bog.

Inland plantation may
be carried too far.

In planting Bog attention should be paid to the probability of a demand for the timber. Near the coast all kinds, and any quantity of timber may be advantageously disposed of; in this District nothing but oak, ash and fir, would be profitable.

Trials of the soil
should be made previ-
ously to planting.

It appears to me that Bogs apparently alike are not always equally proper for the same kinds of trees, it would therefore be prudent to make previous trials before the large plantations should be undertaken. Most Bogs may be prepared for trees by culture; I should therefore recommend that plantations for shelter and ornament should be made on every Bog that is improved; a judicious assortment of timber trees on those Bogs would not only be profitable, but would entirely change the face of the country. If large plantations were made they should be towards the middle of the Bogs, lest they should prevent that free

Planting Bogs might
change the face of the
country.

current

current of air that is necessary to keep the ground sufficiently dry. One advantage attends the plantation of Bog, that is not to be met with elsewhere:

The Drains that are necessary in a Bog may be so disposed as to form inclosures for trees without any additional expense. It will not be difficult for a person of taste, who is at the same time a skilful planter, to lay out Bogs so as to become highly ornamental, without producing more shelter than is wanting:

In the choice of trees, experience alone should be the guide; in some Bogs, as in some soils, one species of tree will not grow, whilst another flourishes in full vigour. I have seen oak flourish well, where ash was wretchedly stunted: Perhaps oak may succeed in shallow Bogs when the plant has strength enough to force its roots downward through eight or ten feet of Bog to solid earth below. I do not however recollect to have seen oak growing far from the edges of a Bog; and I have been told, by a gentlemen of observation, that the roots of no trees can live in the lower part of deep Bogs. My own experience on this subject is but limited. I have seen large and strong Scotch fir in deep Bogs, and some good alder. Aquatic trees, it is said, have the property of drying wet ground, where they have taken root; if this be the case, they might be employed as *preparatory crops*. Timber sally, or *salix viminalis*, is commonly found in Bogs; whether it will thrive in them in their present state I do not know; but I have reason to believe that common osiers do not grow well in such soil.

The other purposes to which reclaimed Bog may be applied are so various, and so much the same as those for which other land may be used, that it is not necessary in the present stage of the business to enter into any minute detail upon the subject. The rich will at first plant ruta-baga, and hemp; the poor, potatoes and flax; and according to the views of the Legislature to encourage the poor to cultivate hemp, the most certain method is to engage for the purchase, at a fixed price, for all hemp raised within a given time. Let the price be liberal, and payable at the principal Market Towns in the neighbourhood, without affidavits or certificates. Some slight frauds may be attempted; but encouragement for perjury will be thus avoided; and even the few attempts to deceive, that may be practised in the beginning, will be discouraged by the fair dealer. The peasant from his own experience, by taking into account the loss of time, and credit, will by degrees learn to conduct himself more wisely and more honestly.

The more remote employment of reclaimed Bog should not be unnoticed; it is a common belief that after some time it returns to its former state. This opinion I have heard most frequently from persons who were at the time feeding cattle upon reclaimed Bog; these unconscionable people, after taking two crops of Potatoes, and two of oats, from the new land, sowed it with coarse Grass-seed; mowed it till it no longer yielded meadow; and then complained that it was throwing money away to improve Bog.

In most of the cases that I have examined, I have found that the capital laid out has been accurately remembered, but that the returns made by the first crops were forgotten, so that only the present produce of the worn-out soil was considered as the return for the original expense of improvement. Had continual additions of limestone gravel and clay been made to the soil, the expense would have been amply repaid, and the soil would at length have become permanently profitable.

I have also heard it asserted, that Ten Pounds per acre laid out upon the best land in Ireland, would yield more profit than if laid out upon an acre of Bog, or other unreclaimed land; this is one of those vague assertions which are made without any foundation in experience, but merely to supply the want of something better to say. If this were the case, why should bills for the inclosure of commons pass every year in England?—Why should not the boundless capital of British Merchants raise the value of land near the metropolis, tenfold every year?—It is true that every acre of ground near London might be converted into a dunghill; but though a dunghill and a hot bed are the most productive soils for Asparagus and Cabbage, could the butter of Ireland, or the cheese of England, be produced by Cows fed on dunghills?—The garden culture of Battersea and Brompton is carried to the highest perfection, and it is profitable, but not to such a degree as to invite that species of competition which always follows high profits.

The scheme of improving the Bogs of Ireland is by no means new. The Dutch, in the time of King William, offered, upon condition of being governed by their own laws, to form a colony in the Queen's County, and to make meadow of the whole Bog of Allen.—(v. Philosophical Survey of the South of Ireland, page 126.)—In fact, the experience of ages teaches what Bacon has told us, that great gains are to be made by parsimony or by new inventions.

It is not surprising that the project of improving Irish Bogs should have occurred at different periods, both to individuals who had only their own profit in view, and to the patriots who are zealous for the prosperity of their country.

Undoubtedly it is an object of the highest importance to the State, and particularly to this portion of the empire, because the modes of life are such in Ireland as would immediately be suited to the cultivation of the kind of soil which may be obtained by the first stage of improvement in Bogs. Much of the cultivation among the great mass of the people in Ireland is carried on by the labour of men without the plough; the tender soil of newly-reclaimed Bog might not for some time bear the tread of cattle, though it might be manufactured by the spade and shovel; and a time will come when many thousand hardy Irishmen

(5.)

EXTRACTS

from the Appendixes to preceding Reports.

Rep. II.

Mr. Edgeworth.

Planting Bogs with suitable trees.

Other purposes to which reclaimed Bog may be applied.

Means of encouraging the growth of Hemp.

Bogs well treated amply repay the Cost of Improvement.

Reclaimed Bog, like other Land, must be refreshed with Manure.

Improvements of Bog compared with Improvements of Land of the best quality.

Scheme of improving Bogs proposed by the Dutch.

Reclaimed Bog peculiarly suited to Irish husbandry.

(5.)

EXTRACTS

from the Appendixes to
preceding Reports.

Rep. II.

Mr. Edgeworth.

Survey of the Bogs
in itself advantageous
to Ireland.Experiments should
be tried of the best
method of improving
Bog in every District.At all events the sur-
veys that have been
made will be useful.Consequence of suc-
cessful experiments.Capital might be ad-
vanced upon good se-
curity.All proprietors would
imitate successful im-
provements.

must return from the Army and Navy to their own country; where to find employment of any sort will not be very easy, and where the wages of ordinary labour are much lower than a soldier's pay; but in the cultivation of land, fit for the immediate production of the common food of the country, they would find a resource against idleness; as they would, if they were assisted by the gift of some timber from the Proprietors of the Bogs, soon build themselves habitations, and would thus have a reasonable hope of being able to support families. Independently of this more remote speculation, we see that in this part of the country the population increases rapidly, and that the fathers of families, when their sons grow up, are obliged to divide their small farms among their children, a system, as Lord Selkirk has shown, in his excellent Essay on Emigration, to be the most destructive of happiness that can be followed in an agricultural country, where there is no means of adding to the quantity of profitable land.

But even if the means proposed for bringing our Bogs to this state of cultivation should not ultimately succeed, yet our labours have not been in vain; to have surveyed our Bogs; to have acquired the most exact knowledge of the levels of their surface; of the depth and consistency of the soil which lies beneath them; of the direction and fall of the Streams and Rivers which intersect them, and which may carry off their superfluous water to the sea, is undoubtedly advantageous to the country, as it enables us to determine, either, that to reclaim our Bogs is impracticable, and a project too expensive; or, on the contrary, that there are well-founded hopes of success. Further, to enable the Nation to decide whether this project be a vain speculation and a job, or a useful feasible plan, let an hundred acres of Bog be procured, by rent or purchase, in every District which has been surveyed under the Orders of your Board; and let such Plans as your Board approves be fairly put in practice, under the inspection of Engineers of your appointment; let the expense be limited within a certain sum per acre, and the result will be before the Public. If it be unfavourable to the scheme, it will at all events be allowed, that the Surveys made under the orders of the Board are valuable materials for a Topography of Ireland; that the inquiry will have raised a spirit of research, and habits of accuracy, that were unknown on such subjects in this part of the United Empire; and that it has introduced into the country a considerable number of excellent instruments, which will oblige Surveyors hereafter to study the construction of Mathematical Instruments, and to be ashamed of such tools as were formerly in use.

I have seen a Surveyor of extensive practice employ a circumferentor, the sights of which were tied on with packthread; and another, *with an iron nut and screw*, to one of the legs of his instrument, within an inch of the needle!

Instead of the miserable scrawls which were given in as Maps of Gentlemen's estates, none but distinct and exact surveys will now be tolerated. If this improvement in the professional habits of numbers of men of understanding, which had been previously cultivated by a certain degree of science, be not in itself a great advantage, there is no faith in the experience of the past, nor any trust in the hope, that as men become enlightened they become better citizens.

But if these Plans and these experiments succeed, the benefit will be instantly perceived, and permanently felt; no person possessed of Bog can fail to wish for its improvement; and all that can then be wanting would be Capital. This might perhaps be safely advanced upon landed security, to landed proprietors, and at such times, and by such degrees, as would leave but little probability of loss, or temptation to fraud. But without the assistance of Government, if we succeed even upon a small scale, British capital will soon be found ready to carry on such profitable work to a large extent. Those who are tremblingly alive to every interference with their property, even with those parts of it which yield them nothing at present, and give no hope of ever yielding any thing, would embrace eagerly a proposal that should leave this darling property untouched by any hand but their own, and which should hold out to them a certain prospect of gain.

The improvement of Irish Bogs has been a favourite object with every true patriot who has written on the affairs of Ireland. There is, in particular, an excellent Essay, written near 150 years ago, upon this subject, in the "Philosophical Transactions," (Lowthorp's Abridgment, Vol. 2. page 732,) in which there is the following passage:

"An Act of Parliament should be made that they who did not, at such a time, make some progress in Draining their Bogs, should part with them to others that would."

This is strict justice in every nation upon earth. No man, from prescription or from any grant, has a right to monopolize and withhold the soil from cultivation. Could the proprietors of the Coal-mines and Salt-pits in England be permitted to combine and shut them all up? Or could the owners of all the Bogs in Ireland lawfully combine to prevent them from being cut for Turbary?

Fortunately for Society such extreme cases do not often occur. Motives of interest in time overcome the caprice of pride; and when mankind clearly perceive private advantage and general utility in any national undertaking, the narrow prejudices of a few are soon despised and overborne; and those who had been most clamorous in their resistance become the most vehement partizans of the very project which they had formerly opposed.

28th October, 1810.

Richard Lovell Edgeworth.

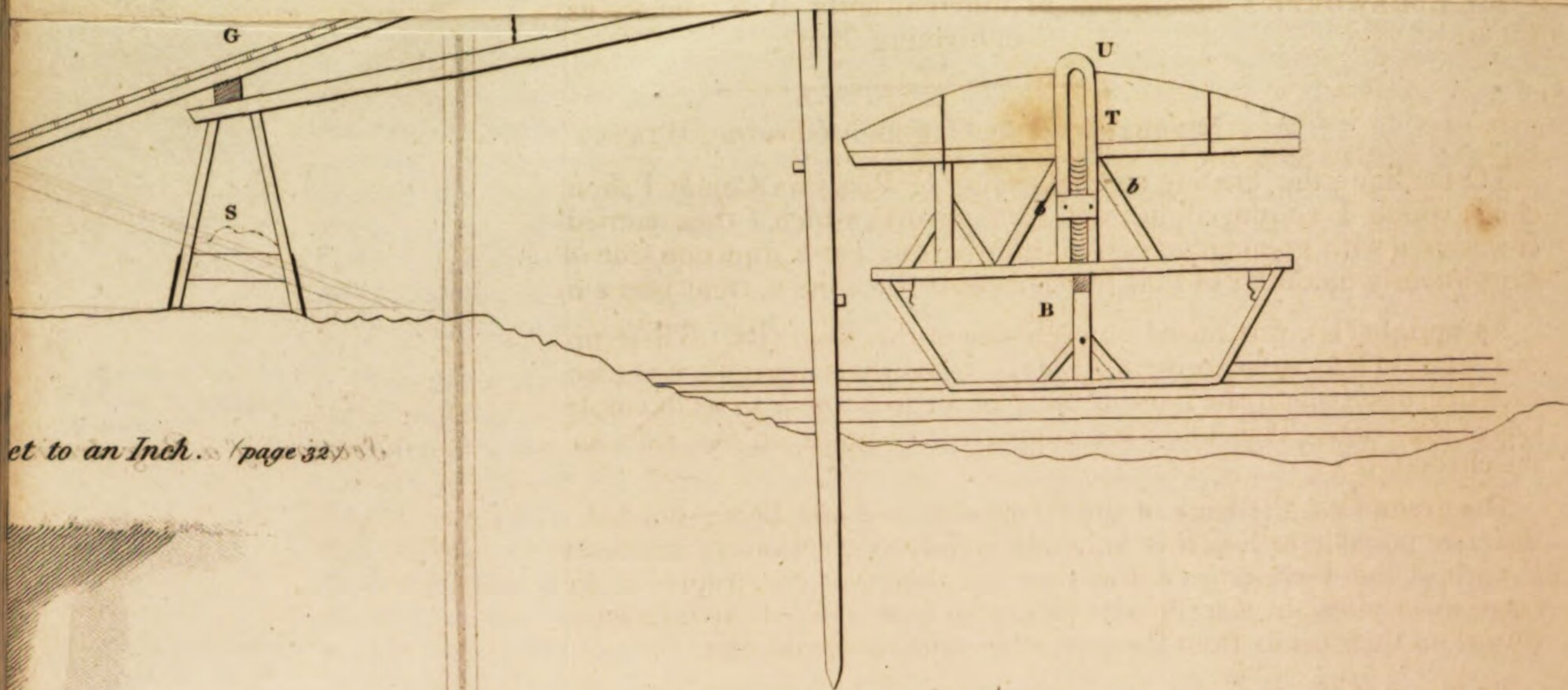
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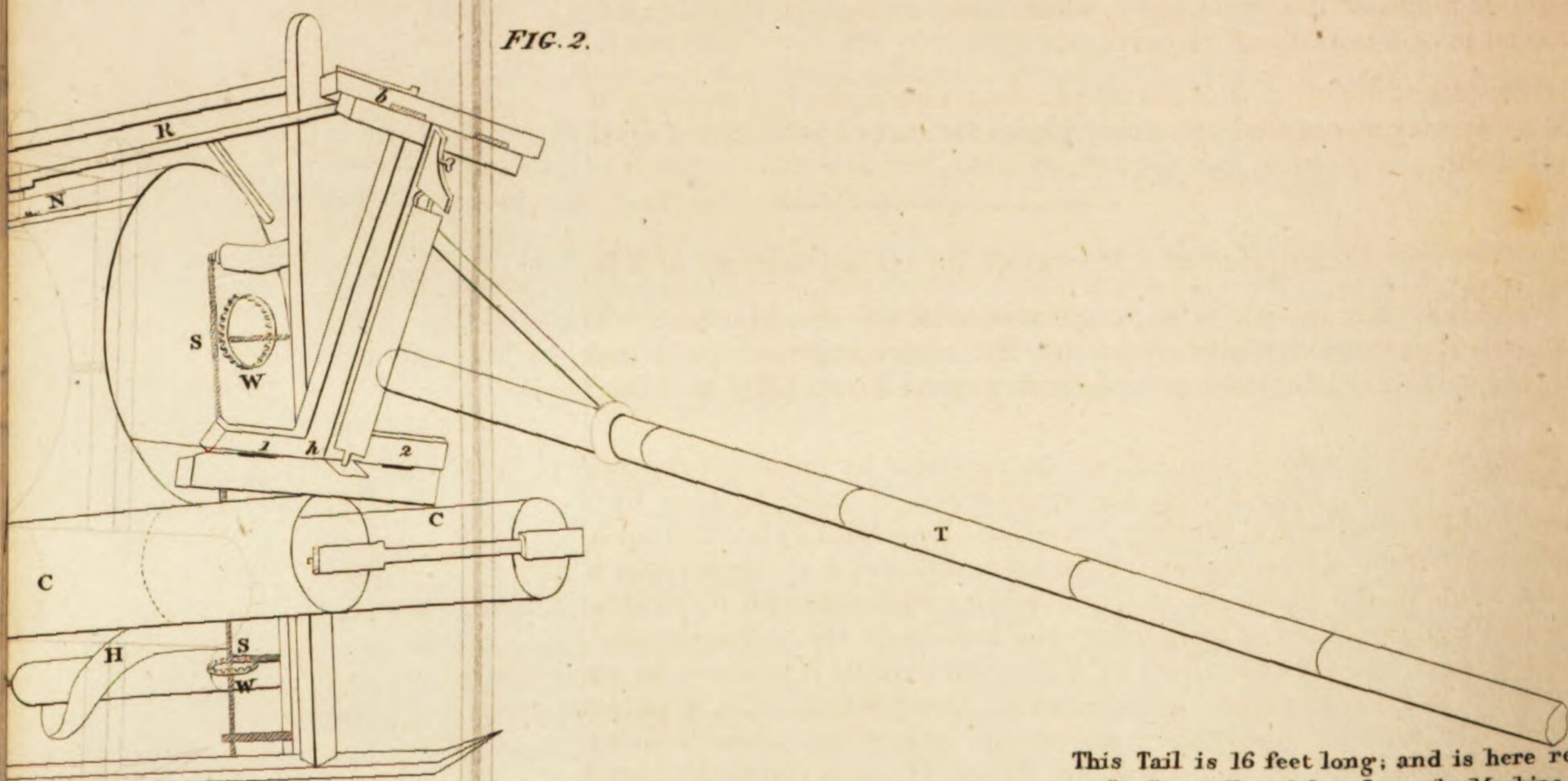
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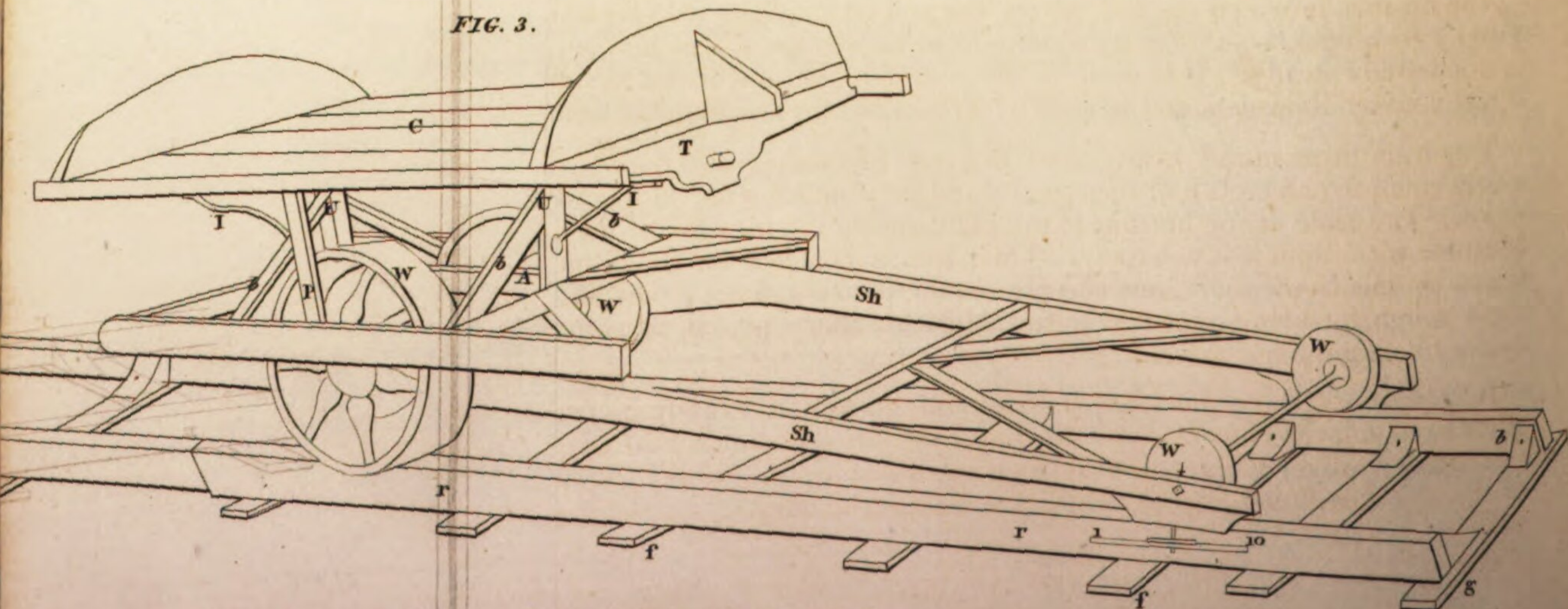
et to an Inch. (page 32)

MACHINE FOR LOADING & UNLOADING BOATS WITH EARTH. (page 183)



This Tail is 16 feet long; and is here represented as broken off at 5 feet from the Machine.

MACHINE FOR SOUNDING RIVERS. (page 186)



PORTABLE RAILING & CARRIAGE. (page 187)

Mr. EDGEWORTH'S description of different sorts of Machinery used in draining and cultivating Bogs.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II.
Mr. Edgeworth.

MACHINE for loading and unloading BOATS:

TO facilitate the loading and unloading of Boats on Canals I should recommend a Machine, which I employed in 1772, in the works which I then carried on upon the Rhone. It was used with great advantage in transporting earth from one side of the Rhone, to fill up expeditiously an outlet of that River, so as to force the current into a new channel.

An upright (U), was raised on each side of the Boat (B). These uprights were braced on each side at (*b b*) to keep them steady. Upon these uprights was placed a long and strong axle-tree, upon which the table or body of a cart turned, so as to empty its contents over the side of the boat. This table was supported by props on one side, and held in its place by the chain (C).

The ground on the bank of the River was very low, being flooded in winter; it was not therefore possible to load this Machine merely by the shovel; besides time would have been lost whilst the boat crossed the river. I therefore constructed a kind of subsidiary cart, raised upon piles, as a receptacle (R), which was filled by men with baskets, which they carried on their heads from the pits, where the earth was dug.

By means of the wide gang-way (G) which was supported by the piles, and by a trissel (S) loaded with sand, they had easy access to the receptacle or cart (R), the numbers of these men were so calculated that they could just fill the receptacle (R), whilst the boat was passing and re-passing the River; and the moment that the boat had returned to the shore the load was poured into it without delay from the receptacle.

Where the land from which the clay is to be taken is on the side of a hill, advantage might be made of this machinery, which upon trial on a very extensive scale was found to succeed in accomplishing its purpose.

Where the height of the gravel-pit does not make it necessary, the upper cart and the gang-way may be omitted; in many places the cart or table raised on the boat will save time and labour.

Description of a MACHINE for taking Sections of a RIVER:

PLATE 1. Figure (2), is a perspective view of the Machine. The drum (D) covered with paper, is turned slowly round by the intervention of perpetual screws and wheels, (W W) which receive their motion from a spiral wheel (H), that lies under the surface of the stream.

As the whole Machine which floats on the water by means of the two hollow cylinders of tin (C. C.) is drawn after a boat, the spiral wheel is made to turn by the resistance of the water; whilst the drum is moving round, the long tail (T) is lifted up by every inequality of the bottom of the River, and as it rises up and down, it moves an arm which is hinged at (*h*) to the frame of the Machine, this arm pushes backward and forward a rod (R) that holds a pencil (P), the point of which marks the motion of the tail upon the paper. The tail has also a motion sideways on pivots (P P), which permits it to move in curved lines where it is necessary. (H) is the spiral wheel turning under water. (S), a perpetual screw turning a wheel. (S), another perpetual screw on the axis of the wheel which turns the wheel (W), which being fastened on the axis of the Drum (D) turns it round under the pencil (P). Each of the wheels (W W) having sixty teeth, the spiral makes 3,600 turns, while the drum makes but one.

The tail (T) is a hollow tube of tin, which fills with water, and becomes sufficiently heavy to sink, but when lifted out of the water, it is light and easily portable, because the water falls out of it.

The manner in which the tail moves the arm (A) and the rod (R) which are connected at 1 and 2 by hinges, is sufficiently obvious from inspection. This motion, by means of hinges, is wonderfully steady. It is used in the common instruments for dividing clock-work, and it was used by Ramsden, and is used by Troughton for dividing Mathematical Instruments.

The drum turns round nearly once in every two miles, and the pencil moves in a space nearly equal to one eighth of the space through which the tail moves when it moves up and down. The scale at the bottom of the plate shows the measure of the different parts of the Machine with sufficient accuracy. The paper is fastened on the drum by a ruler of wood, which by means of the screw (N) presses the paper against a part of the drum, which is made rough by being punched outwards with a sharp punch, so as to have small protuberances like a nutmeg-grater.

It is not necessary that the drum should go round exactly in two miles, or with any other fixed velocity, nor that the short arm and the tail should bear any given proportion to each other; provided that the length of the short arm (A) is any aliquot part of the length of the tail, it will be easy to reduce the Section delineated on the paper to any requisite scale.

(5.)

EXTRACTS
from the Appendices to
preceding Reports.Rep. II.
Mr. Edgeworth.

It is obvious, that the distances measured by the spiral wheel must be different, when the Machine goes with or against the stream: but if the river is measured backward and forward, the mean between these measures will be very near the truth; but for an exact survey a map should be previously made of the River, and the principal reaches of the River; or any other remarkable objects should be marked on the banks of the River, by stakes or hillocks, and they should be noted correspondently on the Map, as the Machine proceeds, so that any errors that might occur in the measurement by the spiral wheel could never accumulate, because they could occur only between one fixed point and another on the banks; and as these points are transferred to the paper, they must be accurate notices of the places observed by the person who conducts the Machine.

The steadiness with which this Machine floats, and the accuracy of its performance, gave me great satisfaction. Were I to wish for any alteration, it should be in the numbers of the wheel-work, which I would make lower, to permit the drum to turn faster: and I might also wish to alter the relative proportions of the arm and the tail, which I would make such as to mark shorter lines upon paper.

The Sections accompanying the Maps belonging to this Report were taken in a very short time, and with great facility. The country people, from the easy motion of the Machine on the water, and from its size and shining appearance, gave it the name of the Swan. The Boatmen, with an epithet taken from its use, called it the Learned Swan.

Windmills for raising Water:

There are various Machines employed for raising Water by Wind; the Windmill working a common pump by a crank is a good and simple Machine; perhaps it may be more securely mounted than it is at present, by using an open pyramidal frame, to support the Windmill; this Windmill should turn on gudgeons at each end of its axis within side of the frame, and the whole frame should turn round with its base upon a solid circular floor, well fastened to the ground; by the intervention of rollers the frame would turn easily as the wind changed, by its action on a vane fastened to the frame.

Archimedes' screw is the best machine that can be employed for raising Water to a height of eight or ten feet, as for instance, to throw the water of a river upon its banks for the purposes of irrigation.

Besides this application of the screw-pump, to the raising of Water, they may be used effectually for the taking of Marle up from the bottom of rivers.

In the Inny there are places where Marle and Clay are found in beds twenty feet thick over the rock; here a Windmill of the common sort might be erected on a flat-bottomed boat; it might easily be removed from place to place, and Marle might thus be obtained at an easy rate.

Description of a Carriage on moveable Railways:

THESE moveable railways are formed of joists of deal, of any convenient length, from eight to twelve feet long, five inches deep, and two inches broad; I generally cut them to the length of the rafters of any house that I am building, because they serve very well for roofing after they have been employed some time as railways; they are formed into frames, with two parallel sides, two feet six inches asunder from outside to outside by transverse pieces, made of common deals, bog-oak, or any common timber, about four inches broad, then transverse pieces are placed about three feet from each other, and they are nailed to the bottom of the parallel joints; they project a little beyond the joists as at (ffff) to add to the steadiness of the frame by giving it a broader base.

There are also brackets (b) (b) (b) &c. to keep the joists upright and in their places.

To connect each frame with that which follows it, the last transverse-rail or foot of the frame, projects half its breadth beyond the joist at (g,) to serve for the foot of the succeeding frame, so that this foot being common to two frames, there is no interruption; where the frames join, where a large quantity of work is to be done, it will be good economy to cover the joints with iron; what is called kieve-iron answers well for this purpose; the moveable railways will however do very well without iron; a number of coarse pieces of refuse timber, eight or ten inches long, and five or six broad, and of various thicknesses, will be necessary to be placed underneath the joists to support them in hollow places.

In soft or boggy ground the feet of the railways must be laid upon short piles, proportioned in length or bulk to the hardness or softness of the Bog.

It is to be observed, that the railways are subjected to the pressure of the carriages only for a short time, and as the carriages move continually without jolts, and as they are never heavily loaded, the pressure is at no time considerable.

The machines or carts adapted to these moveable railways are constructed as follows: The wooden wheels (W W) are eight inches broad, and two feet high, with an iron axle-tree on which they are made fast. The axle-tree has two gudgeons of steel, turned in a lathe, and upon these the wooden wheels also are turned; and afterwards they are covered, or shod with iron, so thin as to adapt itself to the circumference of the wheels, without altering

altering the truth of the wheels materially. The frame which contains these wheels is of ash, about four inches and a half deep, and two inches thick. Its length without the shafts (*s h*) which are made separately, is four feet. Upon this frame are erected two upright pieces (*U*) which are braced at *b b b b*, to keep them steady.

These support a transom or piece (*T*), to which they are strongly fastened by mortises and tenons. This piece, which projects beyond the frame, and beyond the uprights, is supported where it projects, by iron stays (*I I*).

This transom, or piece (*T*), serves for a fixed axle, upon which the body of the cart or table (*C*) turns, not as the body of a common cart turns, or is emptied, but sideways; and this table is so hung that it may be emptied on either side of the railway. There is hinged to each side of this table a leaf, which is let down when the carriage is emptied. Its use is to prevent the gravel from falling against the railway. It is omitted in the drawing, to prevent confusion.

The shafts (*s h*) and their small wheels serve as guides to the Machine, to prevent the principal wheels (*W W*) from rolling off the railways; the shafts are furnished with two small iron wheels (*w w*) eight inches diameter, which carry but little of the weight of the cart, and also with two small guide-wheels (*w . . .*) which turn horizontally against the sides of the railways. To prevent these guide-wheels from rising up, and so permitting the small wheels (*w w*) to slip off the railway, there is a small ledge (*1*) nailed to the side of the railway; this ledge projects over the edges of the guide-wheels.

As this method of keeping carriages on railways depends upon principles different from those upon which common railway carriages are constructed, I shall explain the difference between them.

The usual carriages that run upon railways have four wheels, each pair of which are fixed upon an axletree that turns with the wheels; as both the wheels on the same axletree are exactly of the same diameter, neither of them would advance beyond the other, unless it were retarded or propelled by some extraneous cause, so that the axletrees and wheels must upon an even surface, such as a railway, always advance in a straight line till they are diverted from it by some external cause; and as the wheels are on the sole a little hollow in the middle, their concavity tends to restore them to their proper situation, if they are pushed out of their usual direction.

But still there is a considerable resistance opposed to the righting of the wheels, from the friction of their concave surfaces against the railways, when they cease to move in their proper direction.

A similar cause of friction subsists between the small wheels here described, and their railways, but then the weight that is incumbent upon them is so small as to occasion no inconvenience. The large wheels of my machine are made eight inches broad, to guard against their being thrown off the railway by any accident. By this construction the large wheels are kept very steadily in their places; the moment they are disturbed, they are brought back to their proper situation by the guides, which hold the ends of the shafts to the sides of the railways, so that however obliquely the large wheels are situate on the railway, the guide-wheels tend to force the shafts into a situation parallel to the railway, and the large wheels follow their guidance.

This carriage mounted on the railway moves with great facility and steadiness. The props (*P*.) that hold the table up are readily removed, and the load falls without any violent shock. To keep the load whilst it is falling from encumbering the railway, a leaf is hung at each side of the table, which is turned down to the ground when the carriage is emptying.

The friction of this machine on the centres of the wheels is inconsiderable, not amounting to more than the four hundredth part of the incumbent weight, which is in general about half a ton, the four hundredth part of which is not three pounds. To move the carriage when the railway is solid and level requires eight or ten pounds, so that the resistance from rolling amounts to six or seven pounds, but when the wheels are shod with iron, or made of cast-iron, and the railways covered with iron, the carriage on a level railway moves with more facility.

This however is not intended as a statement of the force actually necessary in common; the force then exerted must, on uneven ground, and from various circumstances, be considerably greater for instance at the boundaries of Bogs; where Bogs suddenly ascend, it requires the thirtieth of the incumbent weight, and sometimes more, to force it up hill; but such sudden slopes are never continued for more than three or four hundred yards, and as the stuff which is to be carried out must be raised near these slopes, assistance is at hand from the labourers who dig the stuff.

Nothing remains to be said as to these moveable railways, and the carriages belonging to them, but to explain the manner in which they are removed from one line of carriage to another.

Each frame of the railway should be about twelve or fourteen long, and about three load should be emptied on each side of each of these frames; as soon as this has been accomplished the carriage passes on to the end of the railway, and there it is received by a tourniquet or

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. II.
Mr. Edgeworth.

frame which turns upon a centre, and conveys the carriage round to a road, at right angles to its former direction; and in the same manner the carriage turns upon another tourniquet at the end, so that it comes back to the pit where it was filled. And thus a succession of carriages may be filled and emptied on each side of the railway, both going and returning.

When about one fourth of the ground, at the greatest distance from the pit, has been covered, the rails may be taken up and laid down at the extremity of a new line, and so on through the whole distance; that is to say, when another convenient portion of the railway has been used, it may be transported to a new line.

It is proposed that one set of frames, half a mile long, should have twenty or more carriages employed upon them, with a proper number of men to load the carts, drive them out, spread the gravel, and remove the railways from place to place.

The operations carried on by this set of workmen would not prevent another set with railways and carriages from working near them; so that a number of men, with proper apparatus, might be employed on one Bog; but for the convenience of procuring labourers, it would be advisable to carry on work in different directions and in different Bogs at the same time. Thus five gangs of workmen might reclaim Five thousand acres of Bog in one year, after the proper machinery had been provided.

The Expense of this Apparatus might be thus stated:

Railways of deal-joist, five inches by two, with kieve hoop iron,	
per perch - - - - -	£. 1 10 0
A Carriage adapted to ditto - - - - -	6 — —

Upon these moveable railways I do not pretend to calculate merely from theory, but from the experience which I had of their utility several years ago, in conveying a very large quantity of limestone to the distance of three quarters of a mile, for manuring land. They answered my expectations; and were I to have occasion to carry out a large quantity of heavy materials on ground that was not hilly, I should employ them in preference to any other mode of land-carriage with which I am acquainted.

I have lately learned that Mr. Roscoe, after various trials of other means, has employed wooden railways and light carriages in improving a peat-moss in Lancashire. The scheme of dividing a heavy load and placing it on several carriages, to diminish the pressure on the Road, was laid by me before the Society for the Encouragement of Arts, &c. in 1766.

SETON-PLOUGH.

THE chief difficulty that prevents the cultivation of Bog, is the impossibility of employing cattle of any sort to plough them, or to put out Manure upon them. But there are cases, in which tools usually drawn by Horses or Bullocks, might on Bogs be drawn by Men.

The Mole-plough is an instrument of this sort; it is, Plough with a conical sock of three inches diameter at the larger end, and sharp at the other extremity; this sock is connected with the Plough-beam by two coulter, which are so long as to permit the sock to run from ten to twenty inches below the surface, while the beam runs near the top of the ground. The coulters cut a passage for themselves, while at the same time they conduct the share, so as to form a cylindrical drain in the earth, which in certain clay soils preserves its shape after the Mole-ploughshare has been withdrawn, and furnishes a permanent passage for water.

I have seen this Plough used with great and lasting advantage in a stiff clay soil; but it is obviously unfit for Bog, the parts of which would fall in and coalesce as soon as the share should be withdrawn; were it not for this the Mole-plough might be drawn by men to advantage, as it is certainly the cheapest instrument for draining land, that is injured by water lying upon its surface or near it.

But I have made an improvement on this instrument, that has adapted it to the drainage of Bogs, even where the soil, if soil it may be called, is so soft as to collapse, wherever a channel of moderate depth has been cut in it.

The sock of this Plough is not more than three inches diameter in its thickest part. An eye or loop is formed at the hinder part, to which a hay, straw, or what is still more easy to be procured, a rope made of heath, may be attached; this rope is drawn through the channel made by a sock, and when as long a rope as can be drawn forward without breaking has been lodged beneath the surface, the chain to which the rope was fastened must be pulled up, and another piece of rope must be joined to it.

This operation may be performed by men, at the rate of one half-penny per perch. Of its efficacy in draining Bog I cannot speak from experience; but if pipes formed in this manner were within one yard of each other, they would cost little more than Forty shillings per acre.

Other methods of making frequent narrow Drains in Bogs have occurred to me, but I forbear to mention them till I have tried them effectually; Drains of all sorts in Bogs are liable to close, and sometimes to be filled up, by the compression of the superior parts of the Bog, which, as somewhat fluid, press not only downwards but in all directions. To ascertain the effects of this pressure on Bog at different depths, I tried the following experiments:

To

To determine the compressability of Bog at different depths I had one piece cut from the top, another from the middle, and a third from the bottom of the face of a Turf-hole sixteen feet deep: after having cut away some feet of the outside of the bank, each of them were successively pressed in an iron cylinder, five feet high and four feet diameter, placed on an iron plate with holes in it, with some hay placed over it to prevent the Bog-stuff from passing through.

First Experiment:

	lbs.
8 inches of Bog reduced to 3 inches, by - - - - -	336
8 inches of Bog taken from the middle, to 2 inches, by - - - - -	336
8 inches of Bog from the bottom, to 4 inches, by - - - - -	700

Eight inches of the upper part of the Bog put into the cylinder, not in the same manner in which it stood in the Bog, but with that part of it put downwards which was before placed laterally in the Bog.

Second Experiment:

	Inches.
8 inches of surface Bog was pressed by 224 pounds for four hours, and reduced to - - - - -	4
8 inches of Bog taken at 4 feet depth, and pressed with 224 pounds for 4 hours, reduced to - - - - -	3 $\frac{1}{2}$
8 inches of the Bog taken at 8 feet depth, pressed with only 168 pounds weight, and for the same time, was reduced to - - - - -	1 $\frac{1}{2}$

From the first set of experiments it appears that the middle of the Bog required less force to compress it than the top required; and that the bottom of the Bog, as was to be supposed, required a weight many times greater than what was necessary to compress the middle or the bottom.

From the second set of experiments it appears, that when Bog is pressed sidewise it follows a different law, the bottom then requiring considerably less force to compress it than the top required.

Third Experiment:

	Inches.
8 inches of surface was reduced by the pressure of 224 pounds in a quarter of an hour to - - - - -	4 $\frac{1}{2}$
8 inches of middle Bog reduced by the same weight and in the same time to - - - - -	5
8 inches of bottom reduced by the same weight and in the same time to - - - - -	1 $\frac{1}{2}$

It appears from the third set of experiments, that the bottom of the Bog, contrary to the first set of experiments, was by far more compressible than either the middle or the top; this difference is attributable to the greater quantity of water contained in the bottom of the fresh Bog, than what was contained in the upper part; and the total difference between the first and second set of experiments arises from three specimens of Bog, in the former having been reduced to equal dryness, by their having been dug out of the Bog a fortnight before they were used, whereas the latter specimens were all of them very wet, the uppermost, being the driest, sinks the least when the water it contains is pressed from it; the lowest stratum sinking the most, from its parting with most water.

(11.)—REP. II.—Letter from Sir *Humphry Davy*, on the nature of Bogs, &c.

Copy of a LETTER from Professor DAVY, to the Secretary of the Commissioners.

Sir,

1st February 1811.

AS the Commissioners for considering the practicability of draining the Bogs of Ireland have done me the honour of requesting my opinion on the important national object to which their attention is directed, I shall without apology beg leave to communicate to them, through your means, such observations as I have been able to make on the subject.

Bogs in general are known to consist of inert vegetable matter, covered more or less with unproductive vegetables, and containing a large quantity of stagnant water. There are two causes why they are unfitted for cultivation. One is the existence of stagnant moisture, the other is the excess of inert vegetable matter.

There is but one mode of removing the stagnant water, which belongs to the practical Engineer, and that is by draining; the different modes of effecting this have been so ably discussed in the Reports before the Commissioners, and which they were pleased to request me to peruse, that it would be presumptuous in me to offer any observations upon this part of the Enquiry.

The mode of removing the excess of inert vegetable matter, and of rendering it useful, is a subject which more immediately comes within the province of chemistry; and on this I shall venture to offer some suggestions.

Bogs differ very much in their composition. In general 100 parts of dry peat contain from 60 to 90 parts of matter destructible by fire, and the residuum consists of earths, usually

(5.)

EXTRACTS

*from the Appendixes to
preceding Reports.*

Rep. II. Sir H. Davy.

usually of the same kind as the sub-stratum of clay, marle, gravel, or rock, on which they are found, and oxide of iron. Burning furnishes a simple mode of destroying the inert vegetable matter, and where the peat contains much earthy matter, tends to supply that which is necessary to every fertile soil, a due proportion of the earths. From the analyses of Mr. Griffith of several specimens of a particular Bog, it appears however that this practice will not be universally applicable, for he found 1,440 parts of several specimens of peat affording only from 12 to 50 parts of ashes; the proportions being greatest in the lower strata. In cases when lime can be applied to the surface of Bogs, there can be no doubt of its beneficial efficacy. If used in its state of quicklime, it not only destroys excess of vegetable matter, but forms a compost extremely favourable to the vegetation of esculent plants. The peat-hills of Derbyshire have many of them been rapidly brought into cultivation, by merely draining, and scattering lime over the surface; and treated in this way, they admit I believe of being ploughed up the second year, and sown with Oats, or planted with Potatoes. Any kind of soil will improve peat; sand, clay, or marle, must be all beneficial, because a great object is to increase the quantity of earth in proportion to the vegetable matter. If a peat is of a black colour, soft consistence, and contains living vegetables at the surface, it will probably be easy of improvement by liming, or the application of the earths. If it is an inert red peat, containing little decomposing vegetable matter, and having only moss at its surface, there is reason to conceive that attempts at improvement should be preceded by burning the surface.

To render Bogs arable land capable of bearing white crops, there must be a certain quantity of earth added to the vegetable matter, or a certain quantity of vegetable matter destroyed, but it appears probable that many Bogs may be made into good pasture by draining and sowing indigenous or foreign grasses, particularly if irrigation can be employed. In England this practice has been particularly successful. At Priestly near Woburn, and at Castle Acre, there are meadows which have been rapidly reclaimed from Bog, and which produce luxuriant and excellent crops of Grass in consequence of Irrigation.

The Commissioners will appreciate the value and importance of my excellent friend Dr. Richardson's ideas on the improvement of Bogs, by cultivating on them the indigenous Irish Grasses.

From a comparison of the able Reports of Messrs. Edgeworth and Griffith, it appears evident that very different plans of cultivation must be adopted in different cases. The chemical composition of Bogs, and the ashes they afford, differ exceedingly, as I have found in various experiments upon specimens of peat from different districts.

The peat of the chalk counties of England contains much gypsum; but I have found very little in any specimens from Ireland or Scotland; and in general these peats contain very little saline matter.

There are peculiar advantages which will strike every one in judging of the practicability of improving most of the great Bogs in Ireland, the quantity of limestone and limestone-gravel in the neighbouring districts, and the marl or clay which in so many cases forms the sub-stratum of the Bog. If the draining can be easily effected, if the upper stratum can by mechanical means be freed from its excess of water, there is no doubt that its cultivation might be rapidly effected.

A few experiments upon the modes of improving these Bogs most unlike each other, would be, perhaps, the best preliminary step towards laying the foundations for the great national undertaking.

This would probably lead to particular plans for each particular district, which would be directed by a minute knowledge of the local circumstances, and by chemical analyses, pointing out the particular nature of the peat.

A soil covered with peat is a soil covered not only with fuel but likewise with manure. It is the excess of manure only which is detrimental; and it is much more easy to destroy it than to create it. To cultivate a Bog is a much less difficult task than to improve a sand. If there is a proper level to admit of draining, the larger the scale of operation the less must the comparative expense be, because machinery may for many purposes take the place of manual labour; and the trials that have been already made by private individuals, and which are stated in the different Reports, prove not only the feasibility of the general project, but afford strong grounds to believe that any capital expended upon it, after mature and well-digested plans, would in a very few years afford a great and increasing interest, and would contribute to the wealth, prosperity and population of Ireland.

I have the honour to be, Sir,

Your most obedient Servant,

H. Davy.

REP. III.—Mr. *Longfield*, on the District of Lough Gara, in Roscommon;
instances of successful improvement, &c.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Mr. LONGFIELD, on the District of Lough Gara, in the Counties of Roscommon,
Sligo, and Mayo.

Rep. III.
Mr. Longfield.

Mr. OWEN O'CONNOR, of Ballinegar, has also made some small experiments of Bog improvement some years back, the expense of which, *including gravelling*, cost him about £.6 per acre, and the piece thus reclaimed is a good bottom pasture to this day; it however now begins to throw up rushes, and will require to be again broken or limed to destroy their growth.

As a general observation, I shall here mention the particular result of some improvements made by Lord Dillon's cottagers at Aughalour, near Loch Glyn, which being done by persons *unaided by capital or scientific knowledge*, proves beyond a doubt, that where personal skill is accompanied by the aid of both, the result must be equal to the expectations of the most sanguine, particularly if the operations are carried on in situations equally favourable as that wherein the improvements alluded to have been effected, and which, in the greater part of this district are frequently to be met with.

[Mr. Longfield then proceeds to give the Statement relative to Lord Dillon's tenants, which is contained in the Third Report.]

In this place I must beg to mention a circumstance, proving my former opinion of the retentive nature of red sponge Bogs, which is simply this; that on making the pits to raise the gravel from under the Bog of Aughalour (the surface of which was in its state of nature, as wet as any other Bog) it was found, after passing with difficulty through five, six or eight feet of Bog and water, that on raising the first shovel or two of gravel from the bottom of the pit, the whole of the water which the hole contained immediately disappeared, and that so long as the bottom of the pit was kept clear of Bog-stuff, it remained quite dry; but if, on the contrary, there remained only *six inches of Bog-stuff* in the bottom of the pit, it was sufficient to retain all the waters received by it.

[Mr. Longfield then proceeds to give the Statement relative to the culture of Fiorin grass on the Bogs of Mr. French, which is contained in the Third Report.]

Considering the subject in general, I have not met any country where the reclamation of Bog could be carried on with such prospects of success, or with such superior advantages, as this district affords; and therefore the system of drainage, which I have the honour to recommend to your consideration, will, I trust, be found simple and practicable, and not exceeding the bounds of moderate expense, when compared with the great benefits to be expected from reducing this part of the Bogs of Ireland to a state fit to receive agricultural improvements.

It is impossible, in so great an extent of district, containing Bogs so different in their circumstances and capability of drainage, to lay down any precise system, applying equally to all Bogs, whether *high, low, deep, shallow, wet or dry*; all which considerations must be distinctly attended to in carrying on the proposed works with economy and effect. However, as it is necessary to give some general idea of the proposed system I mean to recommend, I shall here briefly state that plan which appears to me best calculated to attain the desired object.

First, the natural ventage streams and cushes of the Bogs should be opened, so as to discharge the waters drawn to them by minor and surface drains; but how far the sinking of those streams and cushes are necessary, or can be effected, is only to be determined by the section of each particular line, where the fall of the whole is ascertained; and therefore the sinkings of each line must depend on the level of its local discharging point. No distance can be named as the space between these lines of ventage; but whenever they naturally occur, they should be opened and improved; therefore they may be called the first class of main drains, or natural ventage.

The second class are main drains, laid out pretty central in the lowest vales of the wettest parts of the Bogs, and also lines of catchwater or land drains, the sinkings of which in general will be from seven to ten feet; some of these may be converted into navigable cuts for conveyance of gravel, &c.; but as they are only to be adopted where necessary, they cannot be laid out at equal distances.

The third class are minor drains, six feet deep, nine feet wide, and three feet at bottom, laid out generally at about forty perches asunder, and falling into the main drains and outlet streams, in such directions as to obtain the best fall of the surface. Where the Bogs are deep and wet, I propose that cross minor drains should be cut parallel to, and about forty perches from, the main outlets, so as to cut up the Bogs in patches of about forty perches square, or ten acres each; which patches, I propose, should then be divided into four parts by the fourth and last class called surface drains, as recommended in my report of the river Brusna district, subdividing the said ten acres into parallelograms of two and a half acres each, which, I am inclined to think, will turn out to be the average of the whole of the Bog divisions when effectually drained. In this district, where the Bogs differ so much in circumstances of

(5)

EXTRACTS

*from the Appendixes to
preceding Reports.*Rep. III.
Mr. Longfield.

wet and dry, shaking and firm, I have found it expedient to estimate this part of the system, by the acre at sixteen shillings, averaging the whole surface drainage at eighty perches for every ten acres, at two shillings per perch; which price will not only include the making of the drains in the first instance, but will be sufficient to defray the expense of scouring for the first three years.

These last descriptions of surface drains I recommend to be the same as mentioned in my former report, namely, perpendicular drains four feet wide, four feet deep, and four feet at bottom; and the second and third classes I propose to be three feet at bottom, with battered sides, rising at the rate of six inches to a foot on each side; so that a drain, when ten feet deep, will be thirteen feet wide at top, and three feet wide at bottom. Widening on the top, at the rate of a foot in breadth for every foot in depth of the first class, must all depend on circumstances, and therefore no particular scale can be laid down for them.

In my Report of the fifth district, where the average depth of the Bog is twenty-five feet, I recommended the third class or minor drain to be made eight feet deep; but as the Bogs of this district are in general much shallower, drier, and more numerous intersected by natural ventages, I have, on consideration deemed it advisable to reduce the minor drains to a depth of six feet, which I am convinced will be as efficacious in the Bogs of Roscommon and Mayo, as eight foot drains in the deep Bogs of Allen.

Bog bridges stand well.

In addition to this system of communicating Bog bridges (as recommended in my last Report), formed by leaving about five or six feet of the line of Bog drain uncut, at intervals of every twenty or thirty perches, through which a passage for the water is perforated on a level with the bottom of the rest of the drain, and this can be done without incurring any additional expense. On my last survey, I have seen some of these bridges in the Bog of Croghan, which had lasted in a perfect state then twenty years, and were as good at that time as when they were first formed. I need scarcely add, that the system of screen planting, also before recommended, might be here adopted with equal advantages, particularly if due regard is paid to the proper aspect on which they are laid out.

It may not be improper here to remark, that the population of the county of Roscommon (although generally considered as a grazing county) is exceedingly great, so much so, that every little island or peninsula in the Bogs, contains more than an ordinary proportion of inhabitants; as an instance of which I shall mention one island near Lough Glynn of 107 acres, called Cloonborny, that contains no less than twenty-one families, being little more than five acres to each house, and for which they pay a rent of not less than forty shillings per acre. It is therefore not to be wondered at, that multitudes of these poor peasants emigrate annually to England, where by two or three months hard labour, they are enabled to save the rent of their little farms at home; and I must say, such is the want of employment for the poor, in this part of the country, that I never met men who would go farther or labour harder for a shilling than Connaught-men; nay, it is a fact, that some of the attendants who were with me on the survey, declared they had not the like opportunity to earn money for many years before, although the hire did not exceed 1s. 8d. per day. In an agricultural point of view, there can be no hesitation to acknowledge the advantages resulting from the reclamation of Bogs, particularly where the under-stratum, in their natural state of wetness, does not exceed a depth of from 10 to 20 feet, which by the effect of drainage may be reduced at least one-third, bringing the surface down to within 6, 8, or 12 feet of the gravel, which if porous (as at Aughalour) can, with little difficulty be raised to the surface, there being no impediment by under-water. In a political point of view, I am aware the advantages are equally great, and they may be thus explained: first, by reclaiming the Bogs you increase the profitable soil, and thereby multiply its inhabitants; secondly, the improvement of these extensive tracts, affording labour to the population, will draw their attention from carrying on the illicit trade of distillation, which is now a disgrace to the country in general, and a serious loss to those fair dealers who are not concerned in it; and thirdly, the proposed improvements will make open and accessible at all points, those districts wherein such illicit trade is carried on, and thereby do away the great inducement to private distillation, namely, the difficulty of access to the interior, where the corn is manufactured; what the full extent of this trade amounts to, or how far the revenue of Ireland is injured by it, I am not prepared to say; but this much I verily believe, that in the county of Roscommon, nay, I might say in the whole province of Connaught, there is not one gallon of licensed spirits in every hundred gallons of its consumption, which together with the immense expenditure in vainly endeavouring to prevent it, may be a proper subject of inquiry for those persons whose duty it may be to equalize the burdens of the nation.

In making these general observations, I trust I may not be accused of straying from the particular subject to which my attention should be directed; being of opinion that the more the advantages of bog-drainage can be fairly demonstrated, as tending to promote the general prosperity and resources of the kingdom, the more fully will the objects of the inquiry be satisfactorily attained.

In this bog, as in almost all in the district, very little improvement has been effected. However, there has been an experiment made, which proves the speculation both practicable and profitable; what I allude to is a piece of the bog of Rattallen, containing about two English acres.

This piece, if my information be correct, was inclosed about nine years ago, and after producing five profitable crops, was let out to grass, in which state it remains at present; and

and although now rather turning to rushes for want of a top-dressing, is admitted to be worth one guinea per acre. The rotation of crops was, first, cabbage plants; second and third, potatoes, which the neighbouring farmers acknowledge to have paid abundantly the expenses of improvement; after which it gave two crops of oats, and is now in the state above described, worth one guinea per Irish acre. This experiment certainly has been made on the verge of the land, where there is abundance of the finest limestone in rock and gravel. But independent of that circumstance, the bog was originally no better in point of nature, than any part of the interior, being a complete red sponge bog nearly 20 feet deep.

(5.)

EXTRACTS

from the Appendixes to preceding Reports.

Rep. III.
Mr. Longfield.

REP. III.—Mr. *Aher*, on the Bogs between Roscrea and Killenaul, in Tipperary, Kilkenny, and Queen's County; with a Plate, exhibiting the Section of a Turf Bank and plan of cutting drains;—general descriptions and observations; comparison of expense and profit of various plans; instances of improvement; varieties of crops, &c.

Mr. *AHER* on the Bogs between Roscrea and Killenaul, in Tipperary, Kilkenny, and Queen's County.

AS I shall have occasion to use some terms in the course of this Report, which may require explanation, I beg to be understood, that I use the word Moss, in the same sense as botanists, expressing the plant only, and not applied to the bog generally, as it is frequently used by others.

Explanation of Terms:
Moss.

Bog, Peat, and Turf, are used as synonymous terms, expressing that substance of which the bogs are composed.

Bog, Peat, and Turf.

By fibrous Peat, or Red Bog, is meant the moss or other vegetable substance, whose organization is perceptible, yet approaching towards a state of decay, but not completely decomposed; it cuts with difficulty by the spade, from its tough and fibrous nature, and is seldom used for the purpose of fuel; its colour is red, or reddish brown, thence called Red Bog.

Fibrous Peat, or Red Bog.

Fluid Peat, is when the bog is supersaturated with water, so that it appears to be in a semiliquid state, consisting principally of decayed moss, of a yellowish red colour, with a large portion of water. This is sometimes called Flow Peat, or Quagmire.

Fluid Peat, or Quagmire.

Compact Peat, or Black Bog, is that blackish carbonaceous substance, which appears to have been formed by the decomposition of vegetable matter. When dried, it is used as fuel, burning freely with a bright flame.

Compact Peat or Black Bog.

Turbary, or Turf Bog, is that firm part of the bog, composed principally of compact peat, which is used as fuel.

Turbary, or Turf Bog.

In treating of the composition of Bogs, I shall treat only of those immediately in this district; on examining which, I have reason to think, that they differ from other bogs in formation and composition.

The surfaces of the bogs in this district, present a very regular appearance, resembling extensive plains, rising gently towards the interior; frequently the swell near the edge is rather sudden, forming an elevation of 30 or 40 degrees. In all instances the surface of the interior is much higher than at the verge of the bog, but seldom exceeds 20 feet; the greatest depth of bog is 33 feet, and decreasing from that depth to a few inches, the average depth of the district being 17 feet. And it is remarkable, that the deepest parts of the bog are not always in the middle, but frequently within forty or fifty yards of the verge.

General appearance of the Bogs.
The surface at the interior higher than at the verge.
Average depth of Bog, 17 feet.
The deepest part sometimes near the verge.

The bog generally rests on a stratum of clay, from a few inches to 6 feet in depth, on marl of one or two feet deep, or on gravel of an unknown depth, and in some instances on rock. The base of the bog forms a very uneven surface, being principally composed of small hills, and ridges of limestone gravel.

Substrata of the Bog, clay, marl, gravel, and sometimes rock.

The substances of which the mass of the bog is composed, consist of numerous species of moss, amongst which the Sphagnum, or Bog moss, is by far the most considerable: the others are chiefly the Hypnum or Feather moss; Polytrichum or Hair moss; Lichen Rangiferinus, or Rein Deer moss; Lichen Pyxidatus or Cup moss, with various other plants; which as the Lemna or duck meat, the Conferva, the Iris, the Scirpus or Rush grass, the Eriophorum or Cotton grass, the Agrostis Stolonifera, or Fiorin grass, with different kinds of ferns, and a few varieties of heath, amongst which, Erica vulgares predominates; yet compared to other bogs in this country, heath is rather thinly scattered over the surface.

Substances of which the mass of the Bog is composed.
Mosses and other plants.

Generally, for a foot under the surface, the organization of the Sphagnum is perfectly discernable, exhibiting the structure of the plant, which is sometimes seen, even to the depth of four or five feet, through which its progressive changes may be traced to a state of decay, from the living vegetable until it imperceptibly becomes completely disorganized, and decomposed; forming what I have already termed compact peat, whose thickness or depth is variable.

The organization of the Sphagnum may be traced to the depth of four or five feet.

When the verge of the bog is dry and firm, and the compact peat of tolerable thickness, it generally becomes turbary, and is cut away for fuel; and as this is performed with some regularity, the turf banks are kept with a perpendicular face of fourteen or sixteen feet in depth,

Description of a Turf Bank.

(5.)

EXTRACTS

*from the Appendixes to
preceding Reports.*

Rep. III. Mr. Aber.

Small branches of
birch, hazel, &c. found
at four or five feet
above the bottom of the
Bog.The outward part of
the bark not decayed.Stone turf the best for
fuel.

Renovated Pits.

Matting of grass and
other plants.Dried moss retains its
vegetative power for a
long period.The sphagnum is well
adapted for holding
water.Old roots and trunks of
trees found in the Bogs.

depth, which affords the observer frequent opportunities of viewing the different banks, examining with accuracy its composition, and tracing its varieties, which generally speaking, may be as follows: the surface exhibits a congeries of plants in a growing state, already described, whose roots are interwoven, and sometimes matted together, from one to five feet thick; the sphagnum is observed proceeding from the perfect, to the almost disorganized moss, but yet the fibres are visible; this being unfit for fuel, is thrown aside as useless, and is called by the turf cutters the cleaning. Next, from one to two feet, is a fibrous light spongy turf, which does not burn well, and exhibits the vegetable in some degree with decayed twigs or branches of heath, and sometimes reeds or rushes; from thence to the gravel or clay (which may be from six to twelve feet thick;) it consists of a dark brown or blackish peat, with small twigs of heath and rushes sometimes interspersed; this, on being dried, burns extremely well, with a bright flame, and giving out a strong heat. Frequently, at the distance of about four or five feet above the gravel, is seen a stratum of broken branches of one foot or more in thickness, consisting of birch, beech and hazel; these branches are mostly about two or three inches in diameter, and seldom more than two or three feet long; the woody fibrous part, as well as the inner bark, is completely decayed, whilst the cuticle or outward membrane of the bark, particularly of the birch, still remains in a high state of preservation, retaining its bright and silvery lustre, being much less susceptible of decomposition by putrefaction, which it is so powerfully enabled to resist, from the nature of its component parts. Small branches of heath are also found at every depth; but near the bottom they are much decayed. The best and most durable turf for burning, is that which is near the clay or gravel, and is sometimes of a peculiar quality, which is denominated stone turf, from its hardness and great specific gravity.

Old pits or turf holes are sometimes found filled with a new growth of moss; these having now been cut through, give an opportunity of presenting a section of a renovated pit, as in figure 4, where the surface appears to have sunk in the centre, on being deprived of its water. This new growth consists of some of the varieties of the Hypnum and Sphagnum, and seems perfectly distinct from the original formation with which it is in contact, and in some respects not the same variety of plant. No part of this new formation has yet undergone the process of decomposition, or even far advanced in a state of decay. There are other pits, in which the process of renovation appears to be going on, where the tender fibres of the conferva are spreading like a green film on the surface of the stagnant water; and the lemna or duck meat, whose slender stalks extend for two or three feet, to float its leaves on the surface; those by interweaving with other aquatics, may form a receptacle or bed for the deposition of the light and almost imperceptible seeds of mosses, which are blown about in abundance at the season of their shedding. Such are the appearances which present themselves; but I do not venture to say, how far nature may carry on this work, or what the ultimate effects may be towards a complete renovation of the pit.

And here it may be necessary to observe, that it had been the practice with the peasantry, some time ago, to select the most convenient place to cut their turf from, without attending to the present better regulated system; they commenced with what they termed cleaning, that is throwing the surface of the Bog, for a few feet in depth, into the next adjoining pit, until they came to the compact peat; this surface being chiefly composed of the living moss, continued its vegetative powers in its new situation. The age of those pits, according to the report of the inhabitants, might have been forty or fifty years.

Very frequently, various plants, of which grass seems to be the principal, are found growing so completely interwoven and twisted together, as to form a matting on the surface of the water, or the fluid peat, capable of bearing the weight of men, but not without yielding to the pressure very considerably, and admitting the water through it; there is a matting of this kind, in Division No. 7, over a very sluggish stream of seven or eight feet deep; and there is a similar one on fluid peat, in Division No. 8, near Derrylong Island, which is described in the line section 27. This kind of vegetation on the surface is very frequent in swamps and marshes.

In these instances, the vegetation seems to have been produced on the surface of the water, where each successive growth of vegetables, by their weight, had sunk the former, until at length they reached the bottom; or, perhaps, as the upper surface accumulates, the lower becomes decomposed, precipitating the carbonaceous matter of the plants.

Mosses possess the peculiar property of vegetating after they have been a long time preserved in a dry state; this in some degree shews the difficulty of destroying that vegetable life, of which they are so tenacious. The sphagnum, from its formation, is peculiarly adapted for holding water in suspension, which it greedily attracts, and loses only by evaporation and decomposition.

If a stem or branch of dried sphagnum, six or eight inches long, be suspended, and having a small portion of the lower extremity immersed in or touching water, the fluid will rise by capillary attraction to the upper extremity of the branch, filling all the leaves of the plant, which in this instance acts as so many little vessels to retain the water.

Large roots, and trunks of trees, are commonly found in the Bogs, several feet under the surface; they consist principally of fir, oak, yew, and very rarely elm; the fir roots are found generally resting on a stratum of peat, from two to eight feet thick, which separates them from the clay, on which I have seldom seen them resting. They are sometimes found in great abundance, of a large size, and within three or four yards of each other; the roots in a standing

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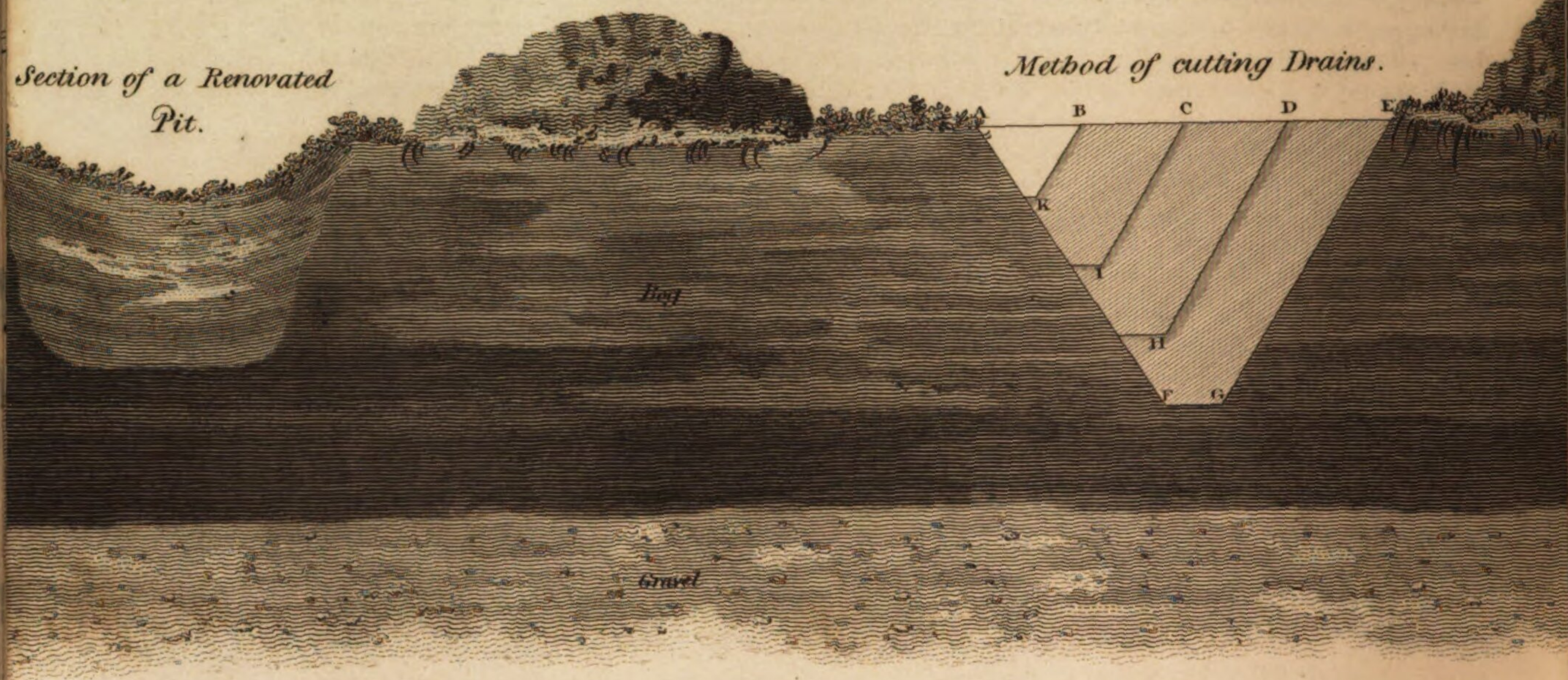
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This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf of a book. The paper has a slightly textured appearance with some minor discoloration and faint, darker spots, characteristic of old paper. There is no text or other markings on the page.



*Section of a Renovated
Pit.*

Method of cutting Drains.



Section of a Turf Bank exhibiting three distinct growths of trees.

*Surface of moss rushes
grasses and heath*

Roots of fir trees

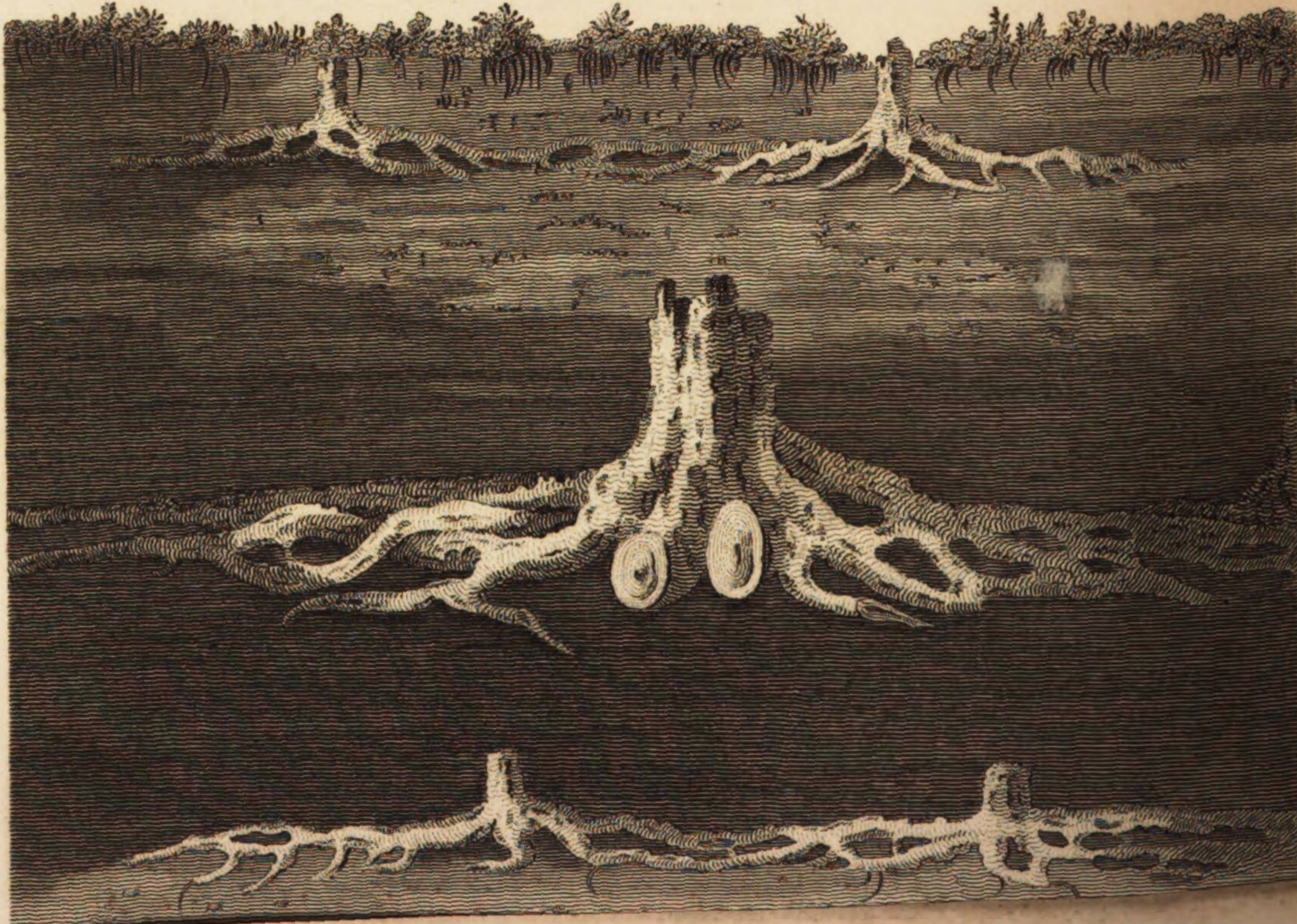
*Brownish yellow fibrous
Peat*

Blackish Peat or turf

Roots of fir trees

*Compact black peat or
Stone turf*

Roots of trees



standing position, as they grew, with about one or two feet of the trunk remaining attached to them; the trunks are often got near them, on the same level with the root, but lying in an horizontal situation, or nearly so, sometimes with, and sometimes without the branches.

Roots and trunks of old trees.

I have not, in any instance, seen the roots of the fir-tree upset, or the trunk adhering to the roots. The roots are found numerous, and very often without any trunks; in all cases, the roots are decidedly the most numerous, even where the trunks are found in the greatest abundance.

The fir roots are not found attached to their trunks.
Roots more numerous than trunks.

On examining some hundreds of these firs, I have not yet perceived the marks of cutting or burning; they appear to have fallen from decay, and to have been partially destroyed by time; the external fibrous part very much decayed, but the internal part of the trunk sound; the timber is used for many essential purposes, and bears a high price at present. The fir roots and trunks possess a high degree of inflammability, from the resin they contain, which I have found in a concrete state in great quantities in the roots, between the bark and woody fibre; in one instance I have met with in the vicinity of fir-tree roots, oozing out of a turf bank in small quantities, assuming the appearance of tallow, as it lay thinly spread on the surface of the peat; it burns with a strong destructive blaze, giving much smoke, and leaving no residue when burnt in the open air. The peasantry know the value of the fir roots so well that they dry them, and separate them from the fibres longitudinally, which serve all the purposes of candles, burning freely with a strong flame, and continuing until the wood is consumed.

The fir trees have not the marks of cutting or burning, but seem to have fallen from decay.

Fir roots contain much resin.

The peat immediately in contact with it, is denominated greasy turf, and forms a stratum of about two or three feet thick; it is very bituminous, and burns rapidly, with a bright flame, leaving very little residue; this bituminous quality it receives from the great mass of fir trees which are imbedded in it, and are most copious in the deposition of turpentine, giving a whitish colour to the peat. This bituminous turf is not found but in the vicinity of these trees, seldom extending for more than a foot above and below the roots. The bark of the fir trees is found sometimes in great quantities in layers near the top of the root, which separate in scales, and are in a high state of preservation; I mention this to shew, that at the depth of twelve or fourteen feet from the surface, in compact peat, the bark is not always changed into that substance, as has been supposed by some writers.

The turf found in contact with these roots, burns rapidly.

The bituminous turf forms a stratum seldom exceeding two feet thick.

Bark not always changed into peat.

I have observed another formation of branches, from twenty inches to two feet under that already mentioned, and about two feet over the gravel or earth on which the Bog rests; they were destitute of a fibrous or organized appearance, completely inflammable, though deposited in an highly inflammable peat; by drying, one half the bulk is lost.

Another formation of branches uninflammable.

As the roots of fir trees spread themselves horizontally, they require greater room than those of the oak, or other roots found in the Bog, and when they are within three or four yards of each other, they spread themselves under or over those of the nearest tree, in such a manner as would induce many to imagine they were distinct growths.

Fir roots occupy more space than those of the other trees found in the Bog.

Oak and yew trees are also found scattered near the verge of the Bogs, but not by any means so general as the fir; they rest mostly on clay or gravel, seldom with a foot of peat between the trunk and the gravel; these trunks are found attached to a part of the root, at least very rarely without it, so as to prove they were neither cut or burned, but probably fell from decay assisted by a tempest; they lie horizontally, the ends not pointing in any particular direction, and are not found as far in the interior of the Bog as the fir trees, but yet frequently covered with eight or ten feet of turf; their being almost invariably attached to their roots, is a striking contrast with the fir trees, which I have never found so.

Oak and yew found near the edges of the Bog.

The trunks of oak and yew being found attached to the roots, forms a striking contrast with the fir trees, which are not found so.

The yew is much esteemed for its neatness and durability in furniture, to which purpose it is generally applied by the farmers, being perfectly sound and retaining its natural colour.

The yew is generally used for furniture.

The oak, some of which becomes black, is highly valued for its great hardness and strength, and therefore always brings a high price; this black oak as it is called, probably receives its colour from the iron held in chemical solution in the water, and the gallic acid in that timber acting on each other; the blackness is greater where it ought to be expected, namely, at the last growth of woody fibres, where the vessels for secreting it from the other juices of the living tree are placed: its blackness has induced many to imagine that the tree had been partially burned or charred, which it much resembles.

Black oak probably receives its colour from the gallic acid in the timber, and the iron in the bog water.

I have seen but one tree of elm in the bog; it was found near a river, was tolerably sound and attached to its root, lying in a horizontal direction, the internal part was blackish, and the external part of the wood was grey, for an inch in thickness.

Elm trees seldom found in the Bog.

The upper surface of the oak or yew, as it lies horizontally in the Bog, is much decayed, and the woody fibres longitudinally detached from each other; sometimes the trunks are found partially rotted, and often hollow in the centre, as may be observed in very old and decayed trees of long standing, which have been destroyed before their fall by the ravages of time; the workmen are paid by the foot for raising this timber out of the Bog. Some of the islands of the Bog are yet thickly covered with roots of oak, ash, and sometimes holly trees; and as considerable quantities of old roots, trunks and branches of trees, are found at the edge of the Bogs, there can be little room to doubt that large tracts of this country were at distant periods, covered with wood. Roots or trunks of old trees are seldom found in the interior of the large Bogs in this district.

The upper surfaces of oak and yew are much decayed.

Some islands of the bog are covered with roots of oak, &c.

The islands are called Derries.

Almost all the islands in the Bogs are called derries, and sometimes woods; the word derry may be a corruption of the Irish word daire, which signifies an oak wood.

There are very few aged trees growing on the bogs.

Hazel, willow, and white thorn, are growing in the valleys in the bogs.

There are very few aged trees growing in these Bogs, except the holly, which are met with ten feet high, and are found growing in great luxuriance on compact peat of eight or ten feet in depth; hazel, willow, and white-thorn trees are found growing in the vales of the rivers which run through the Bogs.

The largest trunks of fir trees which I have seen in the Bog, were two feet six inches diameter, near the root, and forty feet in length; the oak was not quite as large, and the yew less than the oak.

The summits of the bogs are generally the deepest, and always the wettest parts;

and are composed of fluid peat interspersed with tufts of heaths, &c.

The summits or highest parts of these Bogs are generally the deepest, and invariably the wettest parts; in some instances they have large lakes or numerous pools of water covering a large portion of the surface; these summits are sometimes near the centre, often extending across the Bog, and sometimes near the verge; in all cases the summits are composed of fluid peat, on whose surface are interspersed innumerable little tufts, consisting of heath, moss and grass, all of which are matted together, and forming little islands, having an imperfect chain of connection, which in dry weather, admits a person accustomed to it to step from tuft to tuft without sinking much, but yet not without some risk to his personal safety; in wet weather these summits are quite impassable. There is generally an inch or two of water over the surface of the fluid peat in which those tufts are imbedded; this water being nearly transparent and colourless, has a better flavour than the water of the Bog at some distance from the summit, where it is turbid and ill flavoured, depositing a sediment of a brown colour.

The summits are inaccessible in wet weather.

They continue wet during the summer months.

In the summer months, when by evaporation the other parts of the Bog become dry and firm, the summit still continues wet, and supplied with water for two or three hundred acres in extent, giving out all the surplus water, which proceeds slowly from the summit in every direction, and forming the sources of such rivers as take their rise in the Bog; these rivers continue to run at all seasons without intermission.

Springs are often met with in the deepest part of the Bog, rushing up sometimes with much violence, and often strongly impregnated with sulphate of iron, carbonic acid, and earth. The water of almost all the springs in the Bog deposits oxyd of iron on the beds of the streams, in passing from the sources through the Bog.

The bottom of the Bog

The base on which the Bogs in this district rest is principally limestone gravel, which I think cannot be very deep from the dip of the limestone quarries in the islands, and on each side of the Bog; and also from the circumstance of meeting with rock under the Bog, without any intervening substance. Sometimes, but not generally, as will be seen by the sections, there is a thin stratum of earth or marl between this gravel and the Bog, from a few inches to five or six feet in thickness, consisting of lime, alumine, and silex, in various proportions, with a small portion of oxyd of iron; generally the carbonate of lime predominates. But the great mass of the bottom of the Bogs consists of limestone gravel, having rounded pebbles from a very minute size to twelve inches diameter, sometimes embedded in clay.

consists principally of limestone gravel.

Some islands in the Bog contain siliceous sand.

Some of the small hills or islands in the Bog consist principally of siliceous sand, which is also found occasionally near the Bog edge.

Strata of marl over the Bog of Urlingford.

That part of the Bog near the road leading from Johnstown to Urlingford, which is used as pasture, has, at the depth of about six inches under its surface, a stratum of white shell marl, varying in thickness from eight to twenty inches, the average being about fourteen inches. The shells, none of which exceed half an inch in length, are perfectly entire, and of a very delicate texture.

In one instance, I have observed two formations of marl, with about five or six inches of compact black peat intervening.

The Bog beneath these strata is of the black compact kind; its average thickness being about six feet.

Theory.

Most writers suppose that bogs have been formed by the destruction of forests.

The prevailing opinion of those who have written on the natural history of peat seems to be, that by the destruction of forests, which have been hewn down, burned, torn up by storms, or fallen by age or decay, the passage of the waters has been so impeded, that lakes were formed, which encouraged the growth of aquatic plants, and after the lapse of ages filled up the lakes, and assumed the form of peat or Bog; hence, they say, peat mosses are generally found in low flat countries.

Small lakes might have produced aquatic plants, whose decomposition formed black peat.

It may be possible that shallow lakes of a small extent of surface, and well sheltered, might produce aquatic plants, whose successive growth, and subsequent decomposition, formed the black peat, which we find at the bottom of the Bog; this substance, at length rising to the surface of the water, might have been a receptacle for the seeds of the sphagnum and other mosses which are fond of moisture.

This theory not applicable to the Bogs of this District.

There is invariably an ascent from the edge towards the interior of the Bog.

But this theory is not applicable to the Bogs of this District, whose outlets are sufficiently low to take off the water from the bottom, and through which outlets the surplus waters of the Bog continue to run. There is invariably an ascent from the edge towards the interior of the Bog, even where it is higher than the adjoining country

country, for some miles; this ascent is sometimes very gradual, and sometimes sudden, rising eighteen or twenty feet, at the distance of three or four hundred yards; where, in some instances the Bog is higher than the houses on the firm ground near its edge, and as high as the tops of the castles and steeples of the neighbouring country, without any rising ground intervening.

In some places the Bog is on a level with the tops of the steeples and castles of the adjoining country.

Trunks or roots of trees are seldom found at the outlets, or lowest passes of these Bogs, nor is there any appearance of obstruction to the free passage of the waters at those outlets. Such trees as are found, have generally six or seven feet of compact peat under their roots, which are found standing as they grew; evidently proving the formation of peat to have been previous to the growth of the trees.

Old trees seldom found at the outlets;

but when found, they are generally resting on 6 or 7 feet of turf, proving their growth to have been subsequent to the formation of the Bog.

It is a well known circumstance to every farmer, that a wet clay soil is ever productive of moss and rushes, and when left undisturbed accumulates fast, preventing the vegetation of the more useful plants along with them. The most effectual mode of destroying them is, by making drains to cut off the supply of water, by means of which their vegetation had been promoted; but were they allowed to remain undisturbed for centuries, with a sufficient supply of water, perhaps Bogs may have been formed from the successive growth of moss on the ruins or decay of the preceding.

Wet clayey soils produce moss and rushes;

and if left undisturbed, will increase rapidly.

Their growth may be prevented by drainage;

but if neglected, perhaps Bogs might have been formed.

The waters of the Bog generally contain carbonic acid, iron, lime, and other earths, and sometimes a small portion of sulphuric acid. Perhaps some peculiar property in the water may be necessary to contribute to the growth of Bog moss; more particularly so, when it is removed much above the gravel or clay, from whence it can no longer draw any of its nutriment; and as water is decomposed by living vegetables, the substances already mentioned are taken in by the plant, and are by its putrefaction precipitated from it; the carbon, iron, and earth, forming the peat, which receives its inflammable quality from the hydrogen that has been originally a compound part of the water.

Some peculiar quality in the water may be also necessary to promote the growth of Bog moss.

Theory of the formation of peat by the decomposition of vegetables and water.

From the foregoing facts I am led to conclude, that the wetness of those Bogs originates from springs within themselves, and that the principal springs must be at the summits; I am therefore of opinion, that it will be necessary to cut deep drains through the summits at proper distances, and of the dimensions hereafter to be described, for the purpose of intercepting the water of the springs, and giving it a free passage, with a sufficient fall to the most convenient outlet. If a very long period should be allowed for effecting this business, the drains need not be very numerous; for if a few large deep ones were cut from the most convenient outlet, through each summit, so as to communicate with one or more running through the summit lengthwise, to intercept and receive the water of the springs, they would, in some measure retard the growth of the moss, by depriving it of its usual supply of water, it would subside, and become, in process of time, sufficiently firm for agricultural improvements; but this I fear could not be accomplished within any moderate period, from its well known quality of retaining water for a great length of time.

Drainage.

The wetness of the Bogs originates from springs within themselves; the principal springs being at the summits.

Deep drains should be cut through the summits.

The drains need not be very numerous, if a long period should be allowed;

But this mode of drainage could not be accomplished for many years.

As all the parts of the Bog are not equally wet, I have thought it necessary to recommend four classes of Drains, to be used as circumstances may require, and of the following dimensions, viz.

Four classes of drains proposed.

First Class, or Main Drains, to be 18 feet wide at the top, 2 feet at bottom, and 12 feet deep.

First Class, or main drains,

Second Class, 12 feet wide at the top, 1 foot at bottom, and 9 feet deep.

Second Class.

Third Class, 6 feet wide at top, 1 foot at bottom, and 6 feet deep.

Third Class.

Fourth Class, or surface Drains, 3 feet wide at top, 6 inches at bottom, and 3 feet deep.

Fourth Class, or surface drains.

It is to be observed, that in all cases where it may be found necessary in cutting those drains to the greatest advantage, when the execution of the work takes place, that the depths above stated are merely the average depths on which the calculations for the estimates are founded; where circumstances are favourable they may be sunk to a much greater depth at the summits, whilst at the outlets only a few feet may be necessary.

The depths above stated are only the average depths.

As the rivers and streams which pass through the bogs are proposed to be converted into main drains, by sinking and widening their beds, there will be seldom any occasion for making new drains of the first class; which, on account of their dimensions, would be attended with very considerable expense. However, there are some situations where those large drains will be absolutely necessary.

The rivers and streams in the Bog may be used as main drains.

In all cases where it was admissible, I have laid down the lines of the drains in the shortest direction from the summits to the passes or outlets through which the water is proposed to be conveyed from the bogs; thereby giving the greatest possible fall. The drains of the second class are to be placed at the distance of forty Irish perches, or 280 yards asunder, passing through the summits and wettest parts of the bog; these will principally act towards effecting the complete drainage. Those of the third class are to be used occasionally at the same distance, and parallel to the second, where the bog is not very wet. And the fourth class, or surface drains, are so placed, that one runs between the second and third class drains.

The lines of drains are laid out in the shortest direction from the summits to the outlets.

Proposed distances between the drains.

(5.)

EXTRACTS
from the Appendixes to
preceding Reports.

The upland surface water does not contribute to the wetness of the Bogs; because there are natural catch-water drains on the Bog edge.

Drains with sloping sides are preferable to those with upright sides.

Upright-sided drains dangerous to cattle;

but shallow drains of that description may be used in firm Bog.

In firm Bog, the drains may be finished the first year;

and, in the wet summits, a longer period;

by beginning at the Bog edge, and reducing the depth of sinking as the wetness of the Bog increases;

resuming the work from year to year, until finished.

Method of cutting drains.

The excavation should be removed from the edge of the bank.

The drains must be scoured when necessary.

Bogs may be drained too much for the purposes of vegetation.

Dried turf cannot be brought to its original state.

drains, and parallel thereto, at the distance of 20 perches or 140 yards asunder, and others at right angles to the latter also at 20 perches asunder, which would divide the bogs into squares of $2\frac{1}{2}$ Irish acres.

The surface water from the upland does not contribute to the wetness of the bogs in any part of this district, because there are almost always small streams running along the bog edge, which act as natural catch-water drains, and receive such water as falls from the upland, as well as that which falls from the upper parts of the bog; and it will be only necessary to deepen and widen the beds of those streams already formed by nature, so as to enable them to convey the water to the larger streams without interruption.

I have preferred the sloping-sided drains, from a conviction of their being best suited to wet bog, and which has been proved by experience.

Deep upright-sided drains could not possibly stand in fluid peat, where the sides have not sufficient stability to withstand the lateral pressure. Even in compact peat, I have witnessed many instances of the perpendicular banks having been undermined so much by the water, as to cause its falling in and choking up the drain; and those which were originally formed with upright sides, by the crumbling down of the banks, have in the course of time assumed the form I recommended. Besides, sloping sided drains being narrow at the bottom, the running water will have the effect of keeping them free of obstructions more effectually than if the bottom was wide.

These reasons, together with their being so dangerous to cattle grazing at their perpendicular banks, are sufficient for rejecting them.

In firm bog, I admit that such drains may answer very well; but in these situations I shall have little occasion to use any very deep ones.

The mode of cutting those drains should vary according to the wetness or firmness of the bog. In the latter case, when it can be done with propriety, I would recommend the excavation to be made of the intended dimensions during the first year; and in the parts which are less firm, the work may be perfected in two successive years; but in the wettest parts, such as the summits, where the excavation would be filled up almost as soon as cut, I would recommend a longer period. In such cases the drains at the bog edge might be cut to the full dimensions in the first season, if the compactness of the peat would admit of it; the dimensions should be lessened as the fluidity of the bog increased, until it would no longer bear the cutting without collapsing. The drains thus made, would draw off a very considerable portion of the water, and would assist to consolidate the bog against the following season; when the work should be resumed, by commencing at that part of the drains nearest the edge of the bog, and which had been left unfinished the preceding season, still advancing towards the summit, as far as the nature of the bog would admit.

Thus I would proceed every year, until the work should be finally accomplished; by which means the cutting would not be rendered useless by the drain filling up, a circumstance that frequently occurs in very wet bog.

I have already stated, that in sinking drains through firm compact bog the excavation may be done to the full dimensions the first year; but when it becomes less solid, so as to require two operations, a quantity A C I. or A D H. (*vide* fig. 5.) equal to half or three-fourths of the intended dimensions may be sunk; and if the bog should be sufficiently firm the following year, the cutting may be finished.

But where the wetness of the bog will require three or more operations, I would propose the first to be from one-fourth to one-half the dimensions A B K. or A C I. of the width and depth. The next cutting may take place when the bog becomes somewhat consolidated by the drains already made, and this may extend from one-half to three-fourths of their dimensions A C I. or A D H. finishing it in the third or fourth operation, if necessary.

As it must appear obvious, that any weight on the edge of the banks of deep drains would materially injure them, before the bog should subside, and become firm, the excavated peat should be thrown, at least, seven feet from the edge of the bank.

When the work shall have been thus finished, it will be necessary to attend to the drains, and keep them open, by scouring at least once a year, until the bog subsides and becomes firm. Those at the wet summits (where the bog will subside most, from its containing a greater proportion of water) will require particular attention.

As the drains have been laid out, they will generally admit of sufficient fall for conveying the water from the bottom of the bog, as well as from its surface, if they should be sunk to the clay or gravel; but I would not approve of sinking them to the bottom of the bog generally, lest it should be deprived of too great a portion of its water, which is so necessary to vegetation. We see in dried turf, when cut for fuel, the effects produced by depriving it nearly of all its water. Its particles, by coming into closer contact, proportionably lose their affinity for water; so that by steeping turf, once dried for a long period, in cold or even boiling water, no change is produced in its solidity. If broken small, and mixed with water, it loses that tenacity which it had originally, and is rendered incapable of being kneaded into a paste.

Hence

Hence it will be necessary to make sluices in some of the principal drains, to keep up the water for promoting vegetation, as well as for the use of cattle; by which means the water may be disposed of according to the pleasure of the cultivator. The water may be occasionally kept up by sluices.

Some of the drains and rivers may be converted into navigable canals, for the purposes of conveying limestone, gravel, clay, and other manures into the bog, by small floats, capable of holding four tons, which may be pulled by men through the water, while the bog is yet soft, and unable to sustain the weight of horses. Canals.

I have laid out some lines for new roads in this district, which will be of permanent advantage to the country, and serve for the purposes of conveying manure to the interior of the bog, and carrying out the future produce when reclaimed. New Roads.

The occupiers of the upland adjoining the bogs throughout the district, have of late years made various successful attempts towards reclaiming the verge of the bog contiguous to their land; their efforts have been attended with advantages beyond their most sanguine expectations. Those who have short leases discontinued the process, which has prevented large tracts of bog from being under tillage, or converted into pasture; however, they remain convinced of the value of bog as a soil. Reclamation.
The occupiers of the upland adjoining the Bog, have reclaimed some parts of the Bog edge; but those who have short leases discontinued the improvements.

But where the work has been pursued by such of those gentlemen as are proprietors of the bog, we find a different scene take place; and the face of the country completely changed, from a wild and useless waste to ornamental plantations, or luxuriant meadows and pasture grounds. The Proprietors who have reclaimed their Bogs have changed the appearance of the country.

All the rivers or streams running through the bog, form valleys, whose sloping sides become somewhat consolidated, naturally yielding good grass without any preparation whatever, except setting fire to the surface in dry hot weather, by which means the heath and moss are destroyed, giving way in the following season to a spontaneous growth of grass, on which cattle feed at all seasons, but seem particularly desirous of it in summer, probably from the cool and moist nature of the soil being grateful to their feet; some of these valleys produce good hay by very little attention or trouble: The extent of this natural reclamation (if it may be so called) is generally proportioned to the magnitude of the river, being from two to eight perches in breadth. Grass valleys in the Bog.

The manure which has been found to answer best for reclaiming bog, is limestone, gravel, and clay, which may be had in abundance at every part of the bottom of bog, as well as its edges, and in the islands; it being as (I have already mentioned) the upper stratum of which the country is composed. Manures :
Limestone, gravel, and clay.

Marl is sometimes used, and has been found to answer well; but of this there are several varieties in the district; the best containing about 80 per cent. of carbonate of lime. However, I cannot discover that it has been much used on the bog; but from such as have used it, I am led to understand that it is not by any means as productive as the gravel, nor have I learned it has ever been used in the vicinity of this district on the upland soil. Marl.

Lime is sometimes used as a top dressing on firm Black bog, which generally gives a good crop; but it is not considered as a profitable manure, in consequence of the facility with which its very fine particles are washed deep into the porous peat by heavy rains. Peat ashes are found to be very productive as a top dressing on bog, and are also considered as valuable on upland soil. Lime.
Peat ashes.

Stable or farm-yard manure, very deservedly holds the highest rank in the class of manures; but from its scarcity it is always mixed with gravel or peat ashes, or both; with this composition the bog gives abundant crops of oats, rape, flax, hay, potatoes, cabbages, turnips, &c. Stable and farm-yard manure.

Black peat is used as a compost or upland soil; when mixed with lime, mould, dung, or scraping of roads, it is found of essential use. Black peat.

The system pursued for reclaiming bog is generally the same throughout the district. The first year, during the summer months, drains are cut, so as to consolidate the bog, previous to any further advances; the following summer paring and burning takes place, the process of which is as follows: the surface sod which consists of many varieties of moss, grass, heath or fibrous peat, is taken off to the depth of some inches; the spade, hoe, or plough are used, according to the solidity of the bog or the thickness of the sod to be pared. When the surface consists of a light covering of grass and moss on Black bog, the hoe is employed; when it is composed of moss and fibrous peat on wet bog, the spade is used; and recourse is had to the plough, if the bog should be firm enough to bear the weight of cattle. As soon as the paring becomes sufficiently dry, it is mixed with a small proportion of clay and gravel, and is formed into conical heaps, about four feet high, and is set on fire under the influence of the atmosphere. During this process, a great part of the carbon of the vegetable is involved in a gaseous form, along with the hydrogen and other volatile products, and the mass loses at least seven-eighths of its weight. The loss of carbon may not be considered as of much consequence when the ashes are to be used on bog, which abounds in that substance; but for upland a slow combustion would be preferable. Mode of reclaiming Bog.
First year drains are commenced, and when the Bog becomes sufficiently solid, it is pared and burned.
Paring.
Burning.
Carbon and hydrogen are involved.

The value of ashes as a manure is estimated according to the weight and colour; the heavy reddish or brownish coloured being considered the best, from its containing a larger portion of oxyd of iron with lime and alumine; the quantity varying in proportion to the specific gravity. The heavy red ashes from Black Bog are of more value than the white ashes from Red

Bog, which are of little value as a manure.

Mode of improving spongy Red Bog;

When consolidated by draining, it may be grazed by young cattle;

then pared, burned and coated with gravel;

and laid down with grass seeds; when the peat becomes sufficiently decomposed it may get a second coating of gravel to prepare it for a rotation of crops.

Method of reclaiming Black Bog, or cut out Bog.

It may be pared and burned, giving it an even surface, and laying on 1,000 or 1,500 loads of gravel per acre; then plough, harrow, and open drills for potatoes, laying on 250 loads of stable dung.

The produce nearly equals the expense.

Then oats may be sown and laid down with clover and hay seeds.

It is grazed for some years, after which it is broken up again.

The above process was tried by Mr. Smith, and has succeeded well.

gravity of the peat: the black compact sort yielding a greater proportion than the spongy red Bog, which gives light ashes of little value as a manure.

The best method of treating spongy red Bog, after it is consolidated by draining, would be, for the first two seasons, to let young cattle on it from March to September; they would eat the young heath (of which they are particularly fond) along with the grass which grows on its surface. At the expiration of this period the Bog will be in better order and more solid, from the treading of the cattle, and the decomposition which will have taken place by the loss of its superfluous moisture; it may then be pared and burned, and get a coating of limestone gravel of about 500 loads per Irish acre (each load weighing about six hundred weight), which should be lightly ploughed in, and laid down with grass seeds, under which it may lie until the peat should be decomposed to such a degree as would prepare it for a second coating of gravel, to fit it for potatoes and a succession of crops.

Firm black Bog, or cut out Bog, may be reclaimed by paring and burning, giving it a regular and even surface, and where practicable an inclined plane, taking care not to leave any partial rises or swells on the surface, which are apt to become spongy and bad. This may be prepared immediately for a succession of crops, by laying on from one thousand to fifteen hundred loads of gravel to the Irish acre, which should be lightly ploughed in, and harrowed; then opening drills for potatoes, lay on about two hundred and fifty loads of stable dung. The average produce of this crop nearly equals the amount of the expenses of reclaiming. After this potatoe oats may be sown, and laid down with red clover and white hay seeds, which also give a good crop; the grass in the stubble may be eat off by sheep. The ensuing season being kept for meadow, it gives a good crop of hay, and it is then grazed for some years, after which it is broken up again, undergoing a similar treatment. This process has been tried on a considerable extent of Bog in this district, by Mr. Smith of Racket Hall, and in each instance turned out advantageous and profitable. He informs me, "he has no doubt that, by ploughing and trenching on narrow ridges, the two following years would have produced good crops of oats; but at present he has only proceeded so far as the mowing and grazing. However, he means to try the trenching of oats;" after this the process of manuring should be repeated.

As the result of long experience must be considered of importance, I have annexed estimates of the expenses and produce of an acre of potatoes, cabbages and turnips, drawn from the practical knowledge of Mr. Smith.

Estimates of the expense of improving an acre of Bog, with potatoes, cabbages and turnips.

Expense of improving an Irish Acre of Bog, with Potatoes, after draining; viz.

	£.	s.	d.
1,500 loads of gravel, including levelling, at 2 d. - -	12	10	—
Spreading - - - - -	1	—	—
Ploughing - - - - -	—	13	—
Harrowing - - - - -	—	6	6
Opening drills - - - - -	—	6	6
250 loads of dung, at 1 s. - - - - -	12	10	—
Moulding, twice - - - - -	—	13	—
Ploughing, digging out, picking, &c. - - - - -	2	—	—
Seed - - - - -	2	—	—
Sorting and sending to market - - - - -	2	10	—
	34	9	—
Produce, 120 barrels of potatoes, at 20 stone per barrel, or 3 d. per stone - - - - -	30	—	—
Deficient of the first expense, besides rent - -	4	9	—
The same expense for cabbages - - - - -	34	9	—
with additional labour - - - - -	5	11	—
	40	—	—
1,200 heads may be raised; a great waste must be in heads, splitting, decaying, &c. to feed cattle or sheep; allowing one-fourth to be lost, the remainder may be worth 1 d. per head - - - - -	37	10	—
Deficient - - - - -	2	10	—
Turnips, less expense, say - - - - -	28	—	—
This being a more uncertain crop than the other two, and much depending on the use they are applied to, besides the fluctuation of markets for sheep and cattle; an acre will do well to make - - - - -	11	7	6
Deficient - - - - -	16	12	6

" This

" This calculation is made for red Bog; should black Bog be worked on, one-third of the gravel may be spared; the dung also can be dispensed with, as the black Bog, well gravelled and ploughed deep, will afford ashes sufficient."

The foregoing estimates are made for Red Bog, but on Black Bog the expense would be less.

Among the poorer classes of farmers, after burning, they generally lay on four or five hundred loads of gravel, with the ashes, and from fifty to one hundred loads of dung; after which they take off two crops of potatoes in succession, before they sow oats.

Method of reclaiming as practised by the poorer classes of farmers.

Reclaimed Bog produces excellent crops (at least equal to the upland) of potatoes, oats, rape, flax, turnips, cabbages and celery; and answers extremely well for all the different kinds of grasses usually found in the adjacent upland soil; particularly white and red clover, white hay grass and rye grass. The white clover grows spontaneously after gravelling. " Mr. Smith has tried the fiorin grass on four acres of reclaimed Bog, which were planted in October 1809, but had made no great progress until the spring of 1811, when it appeared in a more promising state; this may be owing to the unusually dry spring of 1810, together with want of attention in covering the strings; but wherever it has met with moisture it seems to flourish."

Fiorin Grass.

Several parts of the district, where the streams of the upland may be conveyed on the surface of the Bog, are well adapted for irrigation, and the water may be taken across the drains in wooden troughs at a small expense.

Irrigation.

Within these few years, upwards of two hundred acres of Bog, in different parts of this district, have been planted with trees of different ages, from two to ten years; consisting of Scotch fir, spruce fir, larch, oak, ash, alder, birch, hazel and timber sallow: almost all of which appear healthy, and promise to do well. The Scotch fir is the most abundant in proportion. Some of those trees are planted on wet red Bog, twenty feet from the gravel, others on compact black Bog, fifteen feet in depth; and some have had a few shovels full of gravel thrown under the roots, when planted on the light spongy turf, which evidently answers better than being without it.

Planting.

Upwards of 200 acres of Bog are planted in this district.

The trees appear healthy.

Scotch fir the most abundant.

Trees grow on Red Bog 20 feet from the clay or gravel.

Those trees that have been planted on firm black Bog thrive as well as the same species on upland. Mr. Lidwell of Dromard planted some larch and Scotch fir eleven years ago, and they are now as good as any trees of the same age on the upland in the vicinity.— " Messrs. Birch of Roscrea have planted about seventy acres of cut out Bog, and wet red Bog: the former are thriving as well as the generality of plantations on upland; the latter they have only commenced on last season; and the numbers which have missed are not by any means unusual." The Reverend Mr. Grady of Littleton, Mr. Lalor of Cranna, and Mr. Lalor of Killoran, have also planted a considerable number of young trees on different parts of the Bog, the greater part of which are growing well.

On firm Black Bog trees grow as well as on upland.

REP. III.—Mr. Aher, on a different District in Queen's County; observations on drainage, reclamation, crops, &c.; plants natural to Bogs; analyses, &c.

On Drainage.

IT will appear by the foregoing descriptions, that the falls from the surfaces of the Bogs towards their several outlets, are very considerable, and that there is in general sufficient fall for the drainage of the under strata, as well as the surface; this circumstance is mentioned only as a proof of the great falls which these Bogs have, but at the same time it must be observed, that they should not be drained to such an extent, as to deprive the Bog of too great a proportion of its water, which is absolutely necessary to promote vegetation. In this district, where the Bogs are much detached, it will not be necessary to sink any deep main drains of the first class, such as have been proposed for District No. 8, as the rivulets or streams which pass through or border these Bogs are adequate for all the purposes of such drains.

Drainage.

The falls for drainage of these Bogs are considerable.

Very deep drains will not be necessary.

The drains which I shall recommend as best suited to these Bogs, are similar, and retain the same name as those of the second, third and fourth class of drains, as described in my Report on District No. 8, the dimensions of which are as follow, viz.

2d Class - - 12 feet wide at top, 1 foot wide at bottom, and 9 feet deep.

3d Class - - 6 feet wide at top, 1 foot wide at bottom, and 6 feet deep.

4th Class, or surface drains, 3 feet wide at top, 9 inches at bottom, and 3 feet deep.

Description of proposed drains.

These are stated as the average dimensions upon which the calculations in the estimate are made; but in the execution of the work, the drains in the interior of the Bogs must necessarily be sunk to a greater depth than at the edge where they communicate with the outlet. The lines of these drains are generally laid out in the shortest direction from the summit of the Bog, to the most convenient outlet for effectually carrying off the water.

The drains are laid out in the shortest direction to the outlet.

The drains of the second class are to be used principally in the wettest and deepest Bogs, and are placed at the distance of 40 perches, or two hundred and eighty yards asunder; but where the Bog is more firm or shallow, the drains of the third class are introduced either solely or alternating with those of the second, being parallel thereto, and still preserving the distance of forty perches asunder; and the fourth class or surface drains are to be sunk in two directions, namely, midway between, and parallel to the other drains, and also at right angles

2d class drains; where used, and their distance asunder.

3d class drains.

4th class, or surface drains.

(5.)

EXTRACTS

*from the Appendices to
preceding Reports.*

The distance of the surface drains may be varied.

Drains with sloping sides are best suited to spongy wet bog.

Method of cutting drains.

The drains should be frequently scoured.

Sluices may be erected where necessary.

The excavated peat should be removed and burned.

The Bog near the verge will become firm before the interior.

Observations on the wetness of Bogs.

Annual fall of rain and dew;

how disposed of.

Annual evaporation.

Bogs appear to be supplied with water from

angles thereto, at the distance of 20 perches asunder, which would, with the assistance of the other classes of drains, divide the Bog into squares of $2\frac{1}{2}$ Irish acres each.

This system will be sufficient for draining the wet Red Bogs; but near the edges, where they are more firm, the distance of the surface drains may be varied according as circumstances will allow; but in the estimate, I have charged them according to the regular system above described.

Drains with sloping sides are best suited to spongy wet Bog, and by being made narrow at the bottom they give an increased velocity to the stream, which tends to keep them open and free of obstructions; but in firm Bog, shallow drains, with perpendicular sides, may stand for a considerable length of time. On Bog of this description, the occupiers sometimes leave passages across the drains uncut, and excavate small tunnels underneath, for the passage of water; bridges of this kind are sufficiently firm to admit cattle to pass over them.

In sinking these drains, the mode of proceeding should differ according to the nature of the Bog to be cut through. The excavation near the verge of the Bog should be made to the full dimensions in the first instance, if it be sufficiently firm to admit it; but in the wet parts of the Bog in the interior, where the drains cannot be sunk at once to the full dimensions, they may be excavated to the depth of three or four feet, which would cause the Bog to subside against the following season, when the work should be resumed, by sinking a few feet farther, and thus continuing the process until the drains shall have been sunk to the stated depths, as recommended in my Report on District No. 8, where a plan for cutting drains has been given.

The drains would require to be frequently attended to, and kept open by scouring as often as may be found necessary, until the Bog, by subsiding, shall have become perfectly consolidated, and when they are finished, it may be found necessary to erect sluices in them at various places, either to prevent the Bog from too great a loss of water, by which vegetation might be retarded, or to raise it near the surface for the use of cattle. The peat which has been raised in excavating should be removed from the deep drains, so as to prevent any weight or pressure on their loose soft edges, which would tend to close their sides and choak them; and where opportunities offer, it may be piled in heaps and burned to make ashes for manure.

In the progress of sinking those drains, it is evident that the edges of the Bog, and the parts adjacent thereto, will become firm and consolidated long before the interior parts. Hence the cultivation may commence on those parts immediately, without waiting the completion of the general system of drainage.

To ascertain whether the wetness of these bogs originates solely from rain-water falling on the surface, or from springs in the interior of the Bogs, or from both, is an enquiry of very great importance, and deserving serious consideration, as the system of drainage should be regulated thereby: if for instance, it is supposed to originate from rain-water only, shallow surface drains would be sufficient; but should it be found to originate from springs rising up through the Bog, a system of deep drains calculated to intercept and convey the water of those springs to the most convenient outlet, should be adopted.

Towards arriving at a knowledge of this interesting subject, it might not be amiss to ascertain the probable quantity of water which annually falls, and how that quantity is disposed of. We find from experiments that the average fall of rain and dew in this country, amounts to about thirty inches; and the manner in which we are left to account for the disposal of this quantity is, by the formation of rivers, by evaporation, and by supplying plants with nutriment.

It is evident, that the quantity of rain which goes to supply rivers, must depend on the inclination of the surface on which it falls; the greater the inclination of that surface, the greater will be the portion of water discharged into the rivers.

That Bogs discharge a great quantity of rain-water from their inclined surfaces, is evident from the sudden swellings of their streams and rivulets, which have no connection with the upland: what this quantity may be, is uncertain; but if we judge from the circumstances of the Bog being already completely saturated with water, as well as every other appearance connected with it, we would be induced to suppose almost the entire of the rain which had fallen on the Bog was discharged into the river, and that a very small portion, if any, remained for evaporation.

We also find, that evaporation alone from a surface similar to that of wet Bog, is sufficient to expend a portion nearly equal to the entire amount of what falls by rain and dew annually. If a surface of water is exposed to the action of the atmosphere, about thirty-six inches will be evaporated annually; and from a surface of moist earth covered with grass, a quantity equal to twenty-five inches will be evaporated annually.

Now a great portion of the Bogs of this district being so completely saturated, may be said to expose a surface of water to the action of the atmosphere, while the remainder may be considered as moist earth and grass; consequently the evaporation therefrom would nearly equal the annual fall of rain and dew.

Hence it appears that the Bogs must be supplied with water from other sources besides rain and dew, and this supply can only be from springs rising within them. These springs are

are frequently visible at the summits, where innumerable small pools of water are met with, springs at their summits. divided from each other by a very wet soft kind of peat, through which the water is readily allowed to filtrate. As the surfaces of the water in these pools are all on different levels, the highest must part with its water to the next lowest, and so on in succession; and so the highest pool invariably preserves the surface of its water on the same level or nearly so, during the continuance of the driest seasons; it must follow that it is supplied by springs beneath it.

Reclamation:

Reclamation.

The cultivation of the Bogs in this district has not been carried on to any great extent, as is already mentioned in treating of each division, but generally limited to some detached parts at the Bog edge, where it has succeeded equal to the expectations of the cultivator.

The manures generally resorted to, and which are found by experience to answer best for Manures. reclaiming these bogs, are limestone gravel, marl and turf ashes.

Limestone gravel consists of rounded limestone pebbles of various dimensions, mixed with Limestone gravel. calcareous earth and clay; it gives a considerable degree of firmness and stability to the peat soil, and is considered the best manure for its improvement; it may be obtained in abundance near the borders, and at the bottom of the bogs in every part of the district.

Marl is found in some parts of the district, but has not been much used on the Bogs, or Marl. even on the upland; the proportion of lime it contains is variable..

Turf ashes, as a manure, have been generally esteemed as possessing very valuable pro- Turf ashes. perties in proportion to the weight and colour, the heavy red kind being considered the best; their action on compact peat is a proof of the quality they possess in promoting vegetation on that soil, and there can be but little room to doubt of their having similar effects on upland; but of turf ashes, there are several varieties; the best kind met with in this district contains lime, gypsum, silex, magnesia, alumine, and oxyd of iron, in variable proportions; the white light ashes are obtained so very sparingly in proportion to the quantity of peat burned, that they are not sought for as a manure.

It does not appear that quick lime has been much used as a manure on any of the Bogs Quick lime. in this district; however it may be applied with advantage on well drained compact peat, which it dissolves in proportion to the quantity used; it would not be advisable to use it on fibrous Bog, because the minute particles of the lime would descend too low into the peat, to render its effects beneficial to the surface.

Sand which is partly silecious and partly calcareous, may be obtained in the beds of the Sand. principal rivers and streams of the district; it has not been used as a manure on any of these Bogs, although it may be applied with very good effect.

The process of cultivation after drainage, is similar to that which I have explained in my Process of cultivation. Report on district No. 8; namely, paring, burning and coating the surface with limestone, Paring, burning, &c. gravel and clay, in various quantities, at the rate of from five hundred to fifteen hundred loads per Irish acre, each load weighing about six hundred weight. In some places paring and burning only is resorted to, which is a cheap method of reclaiming black Bog, and succeeds extremely well.

In the Bog of Aghaboe, a luxuriant growth of grass is produced by spreading the ashes Part of Aghaboe Bog improved. on its surface, without the addition of any other substance; but the most permanent im- provement would be effected by clay and gravel, in addition to the ashes.

A very easy and simple mode of improving red Bog is sometimes had recourse to by A simple mode of im- proving Red Bog. setting fire, in the very dry weather to the vegetable surface, where it is firm enough to bear the weight of light cattle; this has the effect of destroying the strong rank grass and small branches of heath, without destroying the roots, which throw out young tender shoots the following spring, on which the cattle appear to feed with eagerness.

Where the rivers or streams pass through the Bog, they form narrow vallies, whose sides produce good grass, on which cattle feed for a great part of the year.

The reclaimed Bogs of this district produce excellent crops of potatoes, oats, rape, flax, Crops produced on reclaimed Bog. turnips, cabbages, parsnips and celery (and in one instance barley) with various kinds of grasses, particularly the meadow soft grass, fiorin grass, and purple meelic grass; the two latter grow spontaneously on dry fibrous red Bog, as well as on the cut out turbary; white clover is also frequently met with, thinly scattered on the surface of compact black Bog.

The difference in the depth of reclaimed Bog does not seem to have any effect on the produce of its crops.

The best rotation of crops for these Bogs appears to be the following:

Rotation of crops.

First year - - Potatoes or rape.

Second year - - Oats, laid down with hay seed and white clover.

Third year - - Meadow, after which it may be used as pasture for some years.

Sometimes two or three successive crops of potatoes, as also oats, are taken off without any additional manure; however it would be advisable to add a small quantity of gravel for each crop.

An Irish acre of Bog may be gravelled an inch thick for £.8. 12.

The bog being previously drained, may for the foregoing succession of crops, by covering its surface with gravel an inch in thickness, being at the rate of three hundred and sixty tons per Irish acre, which with the assistance of portable rail roads, may be laid on the surface for £.8. 12s. per acre, as will appear by the following estimate; viz.

Digging and filling 360 tons of gravel, at 2d. per ton	-	£.3	—	—
Drawing from the gravel pit into the bog, 360 tons, at 2½d. per ton	-	-	3	15
Spreading the same, at ½d. per ton	-	-	—	15
Cost of railway and waggons	-	-	—	10
Wear and tear, and removing	-	-	—	7
Damage to gravel pit	-	-	—	5
			£.8	12
Draining, as per estimate annexed	-	-	1	17
TOTAL expense of draining and gravelling an Irish acre of bog	-	-	£.10	9

being at the rate of £.6. 9s. 6d. per English acre. The bog, thus improved, will be worth from 25 to 35 shillings per Irish acre.

Planting.

Planting on bog may be carried on successfully to a very great extent; the principal kind of trees which are found growing on the bogs, are fir, alder, birch, beech, hazel, willow, and holly, all of which appear to thrive as luxuriantly on well drained compact peat of any depth, as on the upland soil; if there is any difference, it is too trifling to be observed.

Scotch fir and birch are frequently found growing in wet situations, on deep soft bog, but not as healthy in appearance as that on compact bog; to fit the latter kind of bog for planting, nothing more is requisite than keeping it tolerably well drained; but soft Red bog, besides draining, requires a few shovels full of clay and limestone gravel to be thrown about the roots, and this simple preparation is sufficient.

List of plants which grow on these Bogs.

The following is a List of the principal Plants, which grow spontaneously on these Bogs; viz.

- Spagnum palustre, or bog moss; this seems to constitute the principal part of the peat.
- Hypnum, or feather moss.
- Polytrichum, or hair moss.
- Bryum.
- Lichen rangiferinus, rein deer moss.
- Lichen pyxidatus, or cup moss.
- Scirpus caespitosus, } These plants are found in great quantities throughout the district, and form mattings or tufts on soft wet bogs.
- dwarf club rush, } The Scirpus caespitosus, which is called by the peasants
- Anthericum ossifragum, } keeve grass, flourishes best in very wet parts of the bog,
- Juncus, bufonis, toad rush, } where its long and slender roots may be traced to the depth of two feet.
- Erica vulgaris, common heath.
- Equisetum limosum.
- Lemna, or duck weed.
- Conferva.
- Equisetum arvense.
- Scoenus mariscus, bog-rush.
- Mentha sylvestris.
- Hypericum pulcrum.
- Vaccinum oxycoccis, or cranberry.
- Empeticum nigrum, or crowberry.
- Myrica gale.
- Arundo phragmites, common reed grass.
- Eriophorum Angustifolium, narrow-leaved cotton grass.
- Holcus lanatus, meadow soft grass.
- Milica caerulea, purple meelic grass, } These two grasses are very general in the bogs,
- Agrostis stolonifera, fiorin grass. } and are found growing together.

The vegetation of moss seems suspended in very hot weather.

Peculiar property of the Sphagnum, or Bog moss.

Description of a turf bank, exhibiting three successive growths of trees.

The vegetation of such mosses as grow on the bog, seems to be suspended during the hot summer months, when they appear parched and withered, but their roots remain preserved by the water in which they are immersed. Mosses possess a power of absorbing moisture, and retaining it for a great length of time, particularly the sphagnum, which is also endued with the peculiar quality of retaining its vitality for several months after it has been separated from its roots, and it is enabled to resist putrefaction for a great length of time.

In the bog of Clontyglass, adjoining the townland of that name, the turf banks exhibit three successive growths of trees, the roots of which, with part of the stems attached to them, are found remaining undisturbed from the original situation in which they grew, a drawing of which is annexed.

The first or oldest growth is in contact with the gravel, the stems and roots occupying a space of eighteen or twenty-four inches in height; they are separated from the second or middle growth by a stratum of very compact black peat, called stone turf, three feet in thickness;

thickness ; the roots and stems of the middle growth, extend about four feet in height, over which there is a stratum of fibrous peat of a light brown colour, about eighteen inches thick ; on this a third growth appears, not more than about two feet in height, and is covered with moss, grass, rushes and heath, for about nine inches in depth ; the stems of this growth are sometimes visible above the surface.

The stems or trunks of the first or oldest growth of these trees, being from ten to twelve inches in diameter, are saturated with water, and completely unflammable ; the wood is so soft, that a trunk may be easily cut through by a spade, and the entire of its composition is so altered, except the bark, that the species of tree is scarcely discernible, yet the bark that remains still attached to the trunk, appears to be uninjured by time.

The second or middle growth of trees, which are the largest of the three, have their stems about eighteen inches in diameter, at about twenty inches from the root ; they are in a high state of preservation, and retain a great degree of inflammability ; some of the trunks are found lying horizontally near the roots, but the former are by no means as numerous as the latter.

The third or surface roots, which are perfectly sound, have all the appearance of a recent growth, yet no tradition remains amongst the oldest inhabitants of the neighbourhood, of the existence of those trees in a living state ; they appear from their dimensions not to have attained a great age, the diameter of the stem being from four to five inches.

In cutting turf, it frequently happens that on going to a certain depth, the accumulation of water prevents the workmen from proceeding down to the gravel, they are therefore compelled sometimes to leave six or eight feet of the best kind of turf untouched after them, which lies next the gravel ; this might be remedied, by attending more particularly to the drains which should be continued up to the turf banks on a level sufficiently low to take off the water from the surface of the gravel ; but where this is not practicable, it would be advisable to keep the drains on as low a level as circumstances would allow ; by these means a greater quantity of the best kind of fuel would be obtained.

Turf banks are often subject to break down, for want of sufficient drains to carry off the water ; it would therefore be advisable to sink back drains, parallel to the general outline of the banks, which would intercept the water from the interior of the bog, and prevent those accidents to which they are frequently exposed.

The public roads of that part of the country in which this district lies, are generally well made, and kept in excellent order ; in some places I have proposed to connect those roads by new lines running across the bog.

These roads I would recommend to be thirty feet in breadth, and placed between two parallel drains, at the distance of twenty feet from each side of the road ; by this mode, the expense of a number of bridges may be avoided, which on deep bog would be considerable ; and the drains at that distance on each side, would help to consolidate the road, and prevent the water from sapping its boggy foundation, which very frequently happens.

These roads may be laid out, but should not be gravelled until the year following the completion of all the drains in the bog, the surface sod will then have become solid, and form a strong support to the gravel.

From the nature of the bogs in this district, and the manner in which they are detached, the introduction of navigable drains would not be attended with any essential advantage, and must evidently fall short of the utility of portable railways and waggons, as recommended by Mr. Edgeworth.

Bog bridges, as they are termed, are of two kinds ; one consists of a few pieces of timber (usually found in the bog) laid horizontally across the drain, and covered with heath or brushwood, over this are laid sods which are covered with gravel ; if the bridge is intended to be permanent, this kind of bridge may be rendered very efficient, if the materials are strong. The other kind, which is made only on compact firm peat, is formed by leaving a passage across the drain uncut, and hollowing an archway through it at the bottom for the passage of the water ; this kind, it is evident, could not be formed on a soft bog.

It will not be necessary to make any alteration in the mill streams of the district, or to reduce their present supplies of water ; on the contrary, those supplies will be augmented by the proposed drainage. The river Nore affords several good sites for new mills.

Analysis:

Analysis.—Twenty-four cubic inches of compact blackish brown turf, recently cut from a turf bank in the bog of Abbeyleix, weighed 6,544 grains ; being left in a warm room twelve days, was reduced to 13 cubic inches, and in weight to 1,640 grains, which produced 320 grains of charcoal, containing 4 cubic inches ; 2,000 grains of this turf well dried, gave 100 grains of yellowish red ashes, which were found to contain,

Carbonate of lime	-	-	-	-	-	-	-	35 parts
Gypsum	-	-	-	-	-	-	-	31
Carbonate of magnesia	-	-	-	-	-	-	-	3
Silex	-	-	-	-	-	-	-	13
Alumine	-	-	-	-	-	-	-	10
Oxyd of iron	-	-	-	-	-	-	-	8

— 100 parts.

Another

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. III. Mr. Aber.

Turf cutting.

Turf banks are subject
to break down, for
want of sufficient
drains.

Roads.

Roads through Bog.

Navigable drains.
Portable railways.

Bog Bridges made of
timber, &c.

Another kind.

Mill Streams.

Analysis.

(5.)
EXTRACTS
from the Appennixes to
preceding Reports.
Rep. III. Mr. Aber.

Another specimen of ashes from the same bog; contained,

Carbonate of lime	-	-	-	-	-	-	-	61
Gypsum	-	-	-	-	-	-	-	22
Silex	-	-	-	-	-	-	-	8
Alumine	-	-	-	-	-	-	-	5
Oxyd of iron	-	-	-	-	-	-	-	4
								100 parts.

100 grains of red turf ashes from Aghaboe bog; contains,

Carbonate of lime	-	-	-	-	-	-	-	21
Gypsum	-	-	-	-	-	-	-	6
Silex	-	-	-	-	-	-	-	25
Alumine	-	-	-	-	-	-	-	26
Oxyd of iron	-	-	-	-	-	-	-	22
								100 parts.

Another specimen of ashes from Aghaboe bog; contained,

Carbonate of lime	-	-	-	-	-	-	-	27
Gypsum	-	-	-	-	-	-	-	9
Silex	-	-	-	-	-	-	-	26
Alumine	-	-	-	-	-	-	-	21
Oxyd of iron	-	-	-	-	-	-	-	17
								100 parts.

Sphagnum or bog moss was boiled in distilled water constantly for six days, and on being decanted, the water was found to contain sulphuric acid, with a very minute portion of gallic acid and tannin; the boiled sphagnum did not appear to be much altered in its texture.

Water expressed from turf cut on the bog of Abbeyleix, contained sulphate of lime (gypsum) in solution; but did not contain either gallic acid or tannin.

I have subjected several varieties of clay and marl, found under these bogs to analysis, the results of which have given very different proportions; viz.

Marl from Aghaboe bog; contained,

Carbonate of lime	-	-	-	-	-	-	-	85
Alumine	-	-	-	-	-	-	-	7
Silex	-	-	-	-	-	-	-	8
								100 parts.

Marl from Cullena Bog;

Carbonate of lime	-	-	-	-	-	-	-	46
Alumine	-	-	-	-	-	-	-	32
Silex	-	-	-	-	-	-	-	22
								100 parts.

Blue clay from the Bog of Toger; contained,

Carbonate of lime	-	-	-	-	-	-	-	11
Alumine, coloured by oxyd of iron	-	-	-	-	-	-	-	70
Silex	-	-	-	-	-	-	-	19
								100 parts.

Blueish clay from Ross Bog; contained,

Carbonate of lime	-	-	-	-	-	-	-	26
Alumine, coloured by oxyd of iron	-	-	-	-	-	-	-	62
Silex	-	-	-	-	-	-	-	12
								100 parts.

Some unforeseen circumstances have prevented me from concluding a number of experiments on the nature and properties of peat, particularly on charred turf, and its application to the smelting of ironstone, which is found in great quantities in the vicinity of Castlecomer, where the remains of several furnaces are visible; these iron works were carried on to a very considerable extent at a former period, when the country abounded with wood, but have been discontinued in consequence of the scarcity of fuel of that description.

I hope soon to be able to lay before your Board the result of these experiments.

I have the honour to be, &c. &c.
D. Aber.

REP. III.—Mr. Colburne, on the Bogs in the west of the County of Clare; general observations on drains, &c.

Mr. COLBURN, on the Bogs in the western part of the County of Clare.

In cutting the main and cross drains, I would give three inches slope, or better, to the perpendicular foot on the sides, making a surface drain five feet deep, four feet wide on the top, and one foot six inches bottom breadth; the main drains ten feet deep, seven feet top breadth,

breadth, and two feet in the bottom. The wetness of the bog might occasion a variation in the dimensions of the main drains; but generally, I think a slope of three inches to the foot will answer the purpose. I have seen many Bog drains with nearly perpendicular sides, that have stood well. The turf banks are cut nearly perpendicular, and they seldom slip, though frequently of considerable height, and not always cut down to the substratum, commonly with a deep drain at the foot where the turf has been cut out, which does not fill with water until the wet season, except where there are springs. Very few of the main drains in this district will extend ten feet deep; and to that depth they can be bottomed, by casting up the Bog-stuff with a light casting-tool; and no benches or off-sets on the sides will be necessary.

Where new roads are to be made, merely for the convenience of the Bogs, the expense of making them will fall on the reclaimer, and is estimated; but these roads need only to be gravelled ten feet wide. Where the new roads form useful communications with the surrounding country, they will be done by presentment.

Where cultivation has followed the partial drainage of Monmore Bog (on the southern edge next Kilrush, principally, and some few acres near Dunbeg,) the mode adopted is generally similar to that practised in other counties; viz. to dig or plough up the surface of the drained Bog; gather it in heaps; and having mixed some clay with it, (which is got in the bottom of the drains of the shallow bog, or from the adjoining lands,) they set it on fire in dry weather, and the ashes being strewed on the bog, it is again ploughed or dug, and prepared for sowing rape, which I am informed is generally productive. The next crop is oats, and afterwards potatoes, if they can obtain sufficient manure for a crop, otherwise they continue the oat crop until they have sufficient manure collected to bear potatoes. There is no limestone or limestone gravel in this part of the country, so essential to the improvement of waste lands; but the sea-sand and the sea-weed are here in great abundance, and are esteemed excellent manures, and are taken a considerable distance inland, particularly for potatoe crops, and would be invaluable on Bog (where effectually drained) mixed with a portion of clay, and a light top-dressing of lime.

No regular system having, as yet, been put in practice for the draining of any of the Bogs in this district, it is no great wonder that such a project should be treated as chimerical by many who have only observed small patches reclaimed with difficulty, or a few shallow drains cut through large wet Bogs, and left to collapse and fill up for want of occasional scouring and deepening. The result would be very different, if a regular system was steadily pursued, and all, or most part of the drains necessary were opened at once; the main drains gradually cut to their proper dimensions; the cross drains kept open, and to their proper depth, until the Bogs had gradually acquired a tolerable degree of firmness. This, it is true, would require a great number of drains in the wet parts, particularly the summits, which are the wettest parts of the Bogs; and cutting the drains through them at first will be difficult and tedious; but by using proper instruments it can be done reasonable, and the very wet parts will become the best land, from the subsidence of the great quantity of vegetable matter (of which these wet parts or quagmire is composed) getting into a putrid state, and producing a rich manure. The sods cast out of the drains will of course be burned with the first surface heaps.

With respect to the future value of the reclaimed bog, if the drainage were carried into effect in this district, I should conceive that the value would be increased at least seven shillings per acre per annum; and on that supposition I should make the following calculation, leaving a large portion of the district out of the account, such as Turbary, in convenient situations, and now partially drained, and some firm pasturable Bog, and only calculate on the wet and at present useless parts of the Bogs, which contain about 12,000 Irish acres, at seven shillings per acre, making £.4,200 per annum. The estimate for the drainage is £.31,728. 12s. 6d.; but suppose it to be £.42,000, it would be 10 per cent on the money laid out, and is a fair calculation, on the supposition that the Bogs should be invested in the Commissioners, and let on leases, suppose of thirty-one or forty years (after the drainage was complete), at the expiration of which it would be a great property. And I have no hesitation in saying, that the exportation of corn from this country would be equal (in a few years) to supply the deficiency in England, and be a material benefit to both countries; besides giving employment to the peasantry at their houses, and preventing emigration, or the alternative, starvation. The failure in the prosecution of canals, has rendered it necessary to provide some other public works for the employment of the people; and where that can be done without increasing the national burdens, is an object worthy the serious consideration of the Legislature. In Scotland, in one district, from fifty to seventy thousand pounds annually (for several years past) has been granted by Parliament, for the very laudable purpose of executing a canal (the utility of which is yet to be ascertained,) avowedly for the purpose of giving employment to the people there, and preventing their emigration. This is exclusive of the liberal grants for roads and bridges in Scotland, which is considerable every session.

(5.)
EXTRACTS
from the Appendices to
preceding Reports.

Rep. III.
Mr. Colburne.

REP. III.—Mr. *Brassington*, on Bogs in Kildare and King's county; general observations, legislative views, &c.

Mr. BRASSINGTON, on the Bogs between Kildare, Athy, and Monasterevan.

I AM of opinion, that however unsatisfactory all conjectures may be as to how Bogs were originally formed, that the essential difference between Bogs consists in their having or not having soil in their composition; and, as I conceive, the essential difference between Bogs, when contrasted the one with the other, to consist in this, so am I disposed to think, that the difference in solidity and colour, which is observable in different parts of the same Bog, is produced by draining alone; for where the water can be removed by draining, the substance of the Bog which had been dilated by the water, collapses, and being also compressed by its own weight, to which the Bog, whilst undrained, gives resistance, it becomes solid and dry in different degrees from the bottom to the surface, proportionate to the pressure its different parts may have sustained, and the extent of the draining, and necessarily exhibits different shades of colour, consequent upon the different degrees of solidity and dryness.

All the surface drains should be of the same depth and dimensions, viz. the depth of seven feet, and the breadth of eight feet six inches above, and of one foot six inches at bottom. The depth and dimensions of the main drains vary according to the different depths of the Bog; but they should all agree in this; the being sunk to the very bottom of the Bog, without which, in my opinion, any attempt at draining the Bog must be idle and ineffectual.

With a view to the cultivation of the Bog, I should in the first place mention, that there have been no experiments of any consequence made in the reclaiming and improving of Bog in this neighbourhood; the only Bog reclaimed being small spots here and there, which the poor cottagers of the country have endeavoured, as well as they could, to make conducive to the support of their families. The method they uniformly pursue is, after having manured the Bog with a compost formed of turf ashes, the dung of their cowsheds, and the scrapings of the roads, to plant in the first year, a crop of potatoes; and in the two following years, either oats or rye; and the result of this mode of cultivation, if any instruction or inference can be drawn from the merits of a plan, where the means of the persons who conduct it are limited and insufficient for the purpose, fully corroborates the opinion I have before ventured to give, as to the impolicy of using drained Bog for any thing but meadow or pasture; for the corn crops these poor people have are miserably deficient in the quantity and size of the grain, and though with the last crop of corn, grass seed is sown, the grass, owing to the exhaustion of the soil, does not thrive for more than a year at the very utmost.

In fact, the only crop, except grass, at all adapted for Bog reclaimed by draining merely, and which is not cut down to the bottom, is rape; but this could not possibly be cultivated on Moanavullagh Bog, as it requires ashes of turf mixed with clay, which turf could not be procured on this Bog, owing to its great depth, without an expense greatly exceeding the possible profits of a rape crop.

And I conceive, that in cultivating grass, which is the only crop, as I have often observed, adapted to this Bog, the process of irrigation, as tending to the support of vegetation, and by its weight to the compression of the Bog, upon which its improvement essentially depends, and also to prevent the Bog from cracking from dryness (and nothing is liable to become drier or more arid than a drained Bog) would be highly beneficial; nay, without it, I should apprehend, that the Bog would not, for a series of years, become sufficiently compressed and improved, even with the assistance of the top dressing hereinafter recommended, to produce and support any useful vegetation.

The first thing to be done towards preparing the Bog for receiving the grass seeds which it is intended to cultivate upon it, should be perfectly to level the different compartments on it, formed by the intersection of the different surface drains; in this process the irregular heathy hillocks, and different decayed aquatic grasses, together with the stuff taken out of the drains, should be collected in heaps; these heaps should then be burnt and their ashes spread on the Bog.

After the Bog shall have been so manured with ashes, it should get a top-dressing of limestone gravel, here called corn-gravel, which from experience I have found to have a greater tendency to originate vegetation, and lastingly to support it, than any other dressing a Bog can receive; and in procuring the limestone gravel to be mixed with marle, or to be used alone, care should be taken, where there is a choice, to select that which has the greatest portion of clay in it.

And in manuring the Bog, a ton weight of manure should be allowed to every square perch, independent of the ashes spread on it. When the Bog shall have been so manured, it will be fit to receive the grass seed, which should be sown upon it in the month of September, and it should be covered over with the brush-harrow; but after this nothing should be done till the next spring, when as soon as the weather will permit, it should be rolled with a large sized roller, both to level the surface more perfectly, and to afford a landing and additional covering

covering to the grass, and immediately after, in the same spring, it should undergo the process of irrigation. The depth and dimensions of the trenches to bring the water over the Bog, must depend on the subsidence of the Bog, and it will be necessary of course to construct troughs for its conveyance over the drains; but I am certain, from having found timber, while boring in various parts of the Bog, as well in the interior as upon the edges, that the Bog will afford an ample supply of timber, both for the troughs and bridges, which it may be necessary to throw across the drains in different parts.

What description of grass may be best adapted to this new made soil, I am unwilling to give an express opinion upon; but I would recommend, with a view to ascertain this fact, that a trial, upon a small scale, of various kinds be made, particularly of the fiorin grass, so much recommended by Dr. Richardson, who has written a treatise on the reclaiming of Bog, and on the culture of this grass.

The consideration of the foregoing subject has led me to contemplate the utility of an act of Parliament, that would embrace for its object, not only the Bogs, but the low wet lands, which cover so extensive a part of the surface of Ireland, a few observations on the drainage of which, cannot be considered irrelevant to the object of your present enquiries. That such an act would be a matter of considerable importance to the interests of Ireland, must be obvious to any person whose pursuits in life are anywise connected with the viewing or management of land. I have had frequent opportunities of observing grounds, where hundreds of acres were inundated for perhaps six or eight months in the year, which could be effectually remedied by the expenditure of a sum that, contrasted with the object of improvement, must be regarded as inconsiderable.

Frequent instances are to be found, of industrious and improving land-owners, well disposed to contribute their portion of capital to improve the properties of themselves and neighbours, by straightening the course of such streams and rivers as cause the flooding of their grounds; or by removing such obstacles as may increase the floods; but for the want of co-operation of their poor, or perhaps slothful neighbours, such improvement is altogether prevented. Often you may find ill-chosen mill-sites, eel-weirs, &c. as before observed, erected, in innumerable instances, in flat low countries, where the course of the river is naturally sluggish, and where the erection of weirs frequently hold up the waters to such a height, as to injure the lands above them, frequently to the amount of one hundred times the annual value of the mills or weirs which occasion the inconvenience. Such mills and weirs were permitted to be erected in times when the comparative value of land was inconsiderable; but now the increasing population of the country, and the increasing export of provisions to Great Britain, and the consequent increase in the value of land, call forth every exertion to reclaim and render productive not only the Bogs, but also those extensive tracts of bottom or low lands throughout Ireland, which are at present bad pasturage, or (from the floods) uncertain meadow; all which, in the event of drainage, would become some of our best tillage and meadow grounds, and would undoubtedly increase to considerably more than double their present value.

To carry into effect the drainage of any proposed district, the first object would be, to ascertain, under the direction of the Commissioners, the extent of grounds injured, and the proportion belonging to each proprietor, and the increased value which would be given to each estate, in consequence of the drainage.

The variety of tenures under which lands are held, and the number of derivative interests subsisting in many cases between the landlord in fee and the occupier of the soil, present an obstacle to the measure, of raising at once off the lands to be drained a fund for the purpose; as the different persons entitled to an interest in prospect (though not in possession) would be unwilling to advance their proportion of expense; but a fund might be created by a Parliamentary loan, or one made under its authority, for that purpose, the interest of which might be paid by an annual tax on the lands drained, proportionate to the benefit received. By these means, every person entitled to an interest contributes his proportion to the general expense, according to the advantages derived by length of occupation, until it reverts to the landlord in fee, in whom there might be a power to discharge the principal sum. To allow in like manner a power of redemption to the present Proprietors of Bogs, on paying the expense within a limited time, would afford, in my humble opinion, the means of effecting their drainage; for the Commissioners will be pleased to keep in their view, that neither of the great and desirable measures, of reclaiming the Bogs, or draining the marshy grounds of Ireland, can be fully or beneficially effected, without the interference and support of the Legislature.

I have the honour to be, &c. &c.

R. Brassington.

REP. III.—Mr. Jones, on the District of Lough Corrib; successful method pursued at the Bog of Monivae; General Observations.

Mr. JONES, on the District of Lough Corrib, in Galway and Mayo.

IN a letter written by the late Mr. French, of Monivae Castle, to the Dublin Society, in January 1769, he describes different methods he pursued to reclaim part of this Bog immediately adjoining his dwelling-house. He began the work by making a new and straight channel

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. III. Mr. Jones.

channel for the river, which ran within a few yards of his house, and then stopping up the old course, and cutting drains into the new river.

The first method he pursued was, by covering the surface of the Bog with limestone gravel, then laying a coat of dung over it, and planting potatoes upon the dung; the next year he sowed oats or rye, and grass seeds, and the following year mowed the produce; the Bog was so wet, that he was obliged to cut several small surface Drains, which were afterwards filled up when the Bog became firm. To lay the gravel on the Bog, he made roads with hurdles, on which the horses walked, carrying gravel in baskets on their backs; the hurdles were removed from place to place, as occasion required. This Bog, Mr. French mentions, subsided from 15 to 20 feet. After the first crops were taken off, and mowed for two or three years, little tufts of heath began to appear in some parts; these parts he tilled again, and spread dung upon others; but lime effectually banished them, and so did a mixture of kelp and ashes, the refuse of a bleach green, which proved the richest manure; river mud was also spread on one or two acres, which had little effect, only producing a sedgy spiry grass, until dung was laid over it; marle had somewhat a better effect than the river mud, but marle mixed with dung proved very good; lime, dung, or kelp, broke into fine powder, proved the best. Mr. French also reclaimed above an acre by gravelling and laying a coat of fresh lime over the gravel, and planting potatoes on the lime, without dung; the potatoes were small and lay thin, when dug out, but the corn which succeeded them proved very good, and the Bog was thereby well reclaimed. Mr. French tried to reclaim part by burning the surface, but the Bog was red and spongy, and the ashes produced were white, and so light, that it was of little effect. Another method that Mr. French pursued in reclaiming Red Bog, was, when it was pretty dry, after being drained, he laid two or three inches in thickness of dung on the surface of the Bog, without gravel or any other manure under. The crops of potatoes, corn, and meadow following, were full as good as where the gravel was first laid on. In wet Bogs, Mr. French recommends, that gravel should not in the first instance be laid on it, on account of its specific gravity having a tendency to press and sink through the surface into the soft pulp; but when the Bog has been mowed for two or three years, then he advises the gravel to be laid on; when dung is to be had in plenty, Mr. French is of opinion, it is the best material for reclaiming Bog; but he thinks that composts made of lime and earth mixed, or lime and moor, may answer the end of dung; but of this he had not sufficient experience.

The expense of reclaiming an acre of Bog, Mr. French computes to be from four to six pounds; but this expense must naturally increase with the further extension of the improvements into the centre of the Bog.

By the adoption of the above modes, the late Mr. French reclaimed about 32 acres of red and flat moory Bog; and the present occupier, by the further improvement of it, by irrigation in the summer months, has enabled his cattle to graze off three successive crops of grass.

The principal drains made by Mr. French were usually 10 feet wide, but their depth depended on local circumstances, the part reclaimed being from 12 to 18 feet deep, and in some places deeper. Mr. French reclaimed about six acres of the Red Bog by spreading gravel alone on it; this he never tilled, but reserved for pasture; it is far inferior to the tilled Bog, and would not become meadow until covered with other manure, and again tilled. Where gravel was thrown on the sides of the new river, to be carried to the surface of the Bog adjoining, Mr. French planted clumps of spruce, fir, birch, and alder, all of which grew well. The broad-leaved elm, which is interspersed through the meadows reclaimed from the Bog, also thrived well.

The present Proprietor, following the steps of his predecessor, has also reclaimed about 30 acres, in addition to the above.

Between the house and the river, the late Mr. French planted some larch; there was only from eighteen inches to two feet deep of firm moory soil, the under stratum of which was manuring gravel. These trees are remarkably fine, some of them being from 40 to 50 feet high, the trunks of which would square from 20 inches to 2 feet.

As the bogs in general in this district are pretty firm and not very deep, the principal drains being made from 8 to 12 feet in depth, will, I conceive, be found sufficient to reduce them to a consolidated state, so as to receive agricultural improvements.

As it has now been pretty well ascertained, that bogs when sufficiently drained and reclaimed are peculiarly well adapted to the growing of green and white crops, and flax, and also of almost all descriptions of forest and ornamental trees, I should presume that they would also be well suited for growing hemp. Although it has been very generally thought that bogs could not be effectually reclaimed, so as to be cultivated in less time than 8 or 10 years, yet in numerous instances in this district, they have been brought to profit in less than half that time. On the edges and in some of the islands in these bogs are numerous and very populous villages; and although there is but little tillage in comparison, on account of the great quantity of rocky ground adjoining, very little has been done by the tenants in the way of improving. This is principally owing to the want of encouragement, by their getting only short leases, &c. Were the peasantry duly encouraged to promote agriculture, they would yearly reclaim several acres of these bogs, which are so well circumstanced for improvement, by spending that time at it, which is so frequently occupied in annual emigrations.

REP.

REPORT III. Mr. Bald, on the Bogs in Mayo; general Observations, &c.

BOG is formed of vegetable matter, with some small part generally of earthy metallic and saline substance. In the lower strata of bog the vegetable matter is formed in a state of decomposition; in the higher strata, in a state of rixney; and on the surface, in a living state, unless when drained or cut away for turf. In this country bogs are formed of flag plants in the lower strata, and of moss plants afterwards, with different admixtures of decomposed leaves, and the small branches and bark of wood; the larger parts of wood (consisting of oak, pine, yew and willow) being still found in a recent state. They are all in a semi-fluid state, from the water they contain, and which is the support of the moss of which the bogs are principally formed. The cause of bog may therefore be fairly presumed to be the obstructions given by the inequalities of the ground, or the falling of trees or other substances, to the free passage of the water, supplied either by springs or by rain, affording the proper food of the flag and moss plants of which it is formed.

General nature of Bog.

Its cause.

As the effects cease with their causes, so to give a perfect free passage to the waters from the substratum of bog, must destroy the food of the flags and mosses, produce their consequent death, decomposition, and formation into vegetable mould; which, in its progress, can be easily increased by periodical flooding with water, and drying by mechanical mixture, by paring and burning the surface, by the addition of other recent vegetable matter or animal matter, by the application of lime in its caustic state of limestone, or other gravels, or any earthy or stony matter, or by all these means at different times, or any of them most suited to the situation of particular bogs. When reduced to a state of vegetable mould, without the addition of any earthy or stony matter, bogs are capable of producing luxuriant grass both for pasture and meadow, potatoes, turnips, cabbages, rap. flax, oats, barley, and rye, in abundant crops; also timber trees, and, I do believe, hemp; but having no positive certainty of the fact, only offer my belief.

Its improvement

Capable of producing when mere vegetable mould.

Dr. Patterson, on the climate of Ireland, page 185, mentions, "that near the extremity of this peninsula, ascending the lofty mountain of Lough Salt, a few years past, stood a very respectable wood, directly facing the north-west; and from this place through a space of some miles westward, in a rough mountainous country, several woods were growing on exposed heights within these forty years." Page 188, he says, "the trees in Kilderry, the oldest of which were planted prior to the year 1711, grow in a soil whose upper stratum is improved peat, and whose under stratum is either gravelly loam or a sea mud; they are situated in a flat space of ground, very much exposed to the south-west gales, which come forcibly upon them over the course of the broad river Foyle, and a considerable vale of at least five miles in length. General Hart, within these three or four years, has planted above 30,000 trees of various kinds; some of them in moory ground, without breaking up the general surface, but merely by opening holes, and mixing clay with the peat; afterwards keeping them firm, by surrounding them with the sods cut off the surface of the holes." Page 194, he says, "In the county of Antrim, trees thrive in lofty bleak mountain situations. At Fairhead, the most northern extremity of Ireland, and exposed to the fury of the north sea; the mountain ash, beech, oak, with other indigenous trees, grow luxuriantly within 15 or 20 yards of high water mark. In every other part of the coast, where land is of the same form, viz. very high, it is covered with thriving wood; but when the surface is nearly level for a length of way inland, no wood appears; and not a hedge is seen to rise higher than the top of the bank that protects it from the wind. Amongst the rocks on the east face of Agnew Hill, the aspen tree grows luxuriantly at about the elevation of 1,450 feet, and on the top of Sleive Mish, at the height of 1,390 feet, the mountain ash flourishes in the face of every storm."

The plantations made by the late Marquis of Sligo (on a healthy and exposed hill, with the upper stratum chiefly composed of peat, eastward of the town of Westport, without any previous preparation, are in a remarkably thriving state, and composed of larch, pine, and various other species of trees. Natural oaks grow on all the boggy hills throughout this district, alone kept down by the browsing and injury of cattle. Therefore all those bogs which rise to an altitude too great for the profitable cultivation of grain, can with even superior advantage to the public and the individual, be applied to the production of timber, by planting and fencing alone. By the addition of earthy or stony matter to this vegetable mould, a soil is produced of the highest possible fertility, and more easy and certain in all the operations of agriculture, capable of producing all the crops which our climate affords, with the single exception of wheat. Vegetable mould is well known to be the most truly valuable of all manures to the grounds of this country, and indeed of most others also. Bogs when perfectly drained become by the operation of time alone, and in no very considerable period, immense masses of vegetable mould, affording by their drainage the means of indefinitely increasing the productiveness of the present arable land of the country, while they add to its superficial extent that of their own contents.

Effects of the earthy or stony matter.

Valuable as a manure.

Lord Meadowbank, in a publication in the year 1802, mentions of peat moss, reduced to the state of vegetable mould by decomposition, and used as manure. "Both the power and the duration of the manure have now stood the test of a great variety of trials, and considerable extent of ground, and of much variety of soil, continued without intermission the last six years. Hitherto it has been found equal and indeed preferable, to common farm yard dung, for the first three years, and decidedly to surpass it afterwards."

General
Observations.

At first view, a difficulty of procuring population for such an extent of cultivable land, added to the country might be feared, and indeed no country can, I believe, be found of similar climate to this, where the population is greater than the proportion to the quantity of cultivable land in which no extensive manufactories are carried on, and in truth the population having risen on the sides of the mountains to the height of 500 feet above the level of the sea, and descended on the very edges of the bogs until stopped by the wetness; and the constant division of the land amongst the families of the occupiers, and even to such small extent as not generally to leave at the present moment more than two acres and a half capable of aration to each family; and which may fairly be averaged, on the lowest computation, at five persons, giving, in a country almost purely agricultural, not more than one half acre capable of aration to each inhabitant living by the soil; little difficulty can be feared of the population at once rising to meet the additional supply of support to be derived from the cultivation of any possible extent of any cultivable land added to the country, were it even infinitely more extensive than the reclamation of the whole of the bog soil within Ireland would supply; and estimating according to the present rate of population to the soil, the drainage of this district would increase the population of the country above 46,000 souls. In the eminent work of Malthus on Population, (p. 336) he states "It has been universally remarked, that all new colonies, settled in healthy countries where room and food were abundant, have constantly made a rapid increase in population," and reclaimed bogs in Ireland would have all the advantages of new colonies, both as to room and food in abundance, and none of their difficulties in distance and transport; and would therefore make a much more rapid progress in the increase of their population. (In page 349 of Malthus, it is stated) "other circumstances being the same, it may be affirmed that countries are populous according to the quantity of human food that they can produce or acquire." I am therefore clearly of opinion, there can be no reasonable doubt entertained of the population not rising to the measure of the capability of the supply of food. The average rent of the arable land throughout this district, I estimate at £.2 sterling, per Irish acre, by the year. I have determined the depth and nature of the different drains suited to each bog, so as entirely and permanently to effect its drainage, and fit it, when executed, for all the different purposes of agriculture, and to bear every description of stock; and the carriage out of the necessary manures on it, and its future produce from it.

Average rent.
Drains.

Execution.

In the execution of these drains I would recommend the adoption of the very ingenious plan proposed by Mr. Griffith, in his first report.

REP. III.—Mr. *Townsend*, on the bogs in Tyrone, Armagh, &c.; general observations on the effects of existing acts of Parliament, &c.

MR. TOWNSEND on the bogs in Armagh, Tyrone, &c.

NOT being prepared to report fully on this particular district, I beg leave to offer a few general remarks respecting the reclaiming of bogs.

In order to make bogs effectually and permanently productive, a new surface must be created for vegetation; draining alone will not accomplish it, but ought rather to be considered an auxiliary step, subservient to the mode of cultivation, and not in all cases to precede.

The plan of cultivation should be determined on before the drainage is proceeded with; because, if properly managed, it will frequently supersede the use of drains: for if the surface of a bog can by any means be brought to such a state as to prevent the rain water from soaking into it, the effect is the same as to make drains for drawing off that soakage. There is no necessity to make any provision for taking away the springs in the substratum of the bogs, as those waters do not affect the surface. What may properly be denominated springs from the bowels of the earth, could not penetrate through such a tenacious substance of the thickness of the bogs in general, except their sources were at some immense altitude.

It has often been proved, that when any part of a canal is cut through a bog, there never is any leakage.

I have seen large reservoirs made in elevated parts of the country, constructed for the purpose of supplying a canal with water, where peat earth or bog stuff was found to be most efficacious for puddling and staunching the bottom, which happened to be porous.

There are swamps or flooded places in the bogs (I do not mean those parts that are flooded by the swell of a river or stream, but such places as are at times nearly covered with stagnant water) which require a fall or descent by cuts or drains, in order to let off the water in the same manner as any other marshy ground should be treated, by deepening the rivers or streams which are the cause of the injury. But the bogs are of a totally different nature to the swamps or marshy places that I am now alluding to, and require a different treatment.

If the entire surface of a bog was to be cultivated, the effect, I think, would be very different to that of only a small patch being reclaimed, which of course is almost surrounded by the pristine bog, and always receiving moisture from it. This is a distinction which, I conceive, is requisite to observe, because the steps to be pursued should vary according to the relative circumstances of each; a distinction which ought to be duly considered.

It

It appears to me a matter of the utmost consequence to guard against extreme drainage, and to proceed with it cautiously, on whatever plan it may be adopted; otherwise there will be far more difficulty in procuring water hereafter, than in getting rid of that which at present lodges on the surface of the bogs.

Nature points out the mode of improving Bog; and although its progress is so slow, as scarcely to make any perceptible improvement in one generation, yet after a lapse of time, she accomplishes sufficient for an example for the industry of man to improve and benefit by. The specimens we meet with are on the banks of rivers or small streams, which come from the highlands, and run across Bogs. These are generally grassy as far as the floods happen to reach; clay, sand, &c. being carried with the stream in time destroys the moss; and the mud deposited along its banks, as the waters subside, forms a proper compost or mould for receiving grass and other seeds, fortuitously carried by the stream or the winds; and thus a very simple process by degrees changes the moss or Bog into pasturable ground, and a constant accumulation of clay makes a firm surface for cattle to walk on.

Irrigation, where clay or manure can be got to mix with the water, will improve vegetation; the small streams will perchance convey now and then a few grass seeds, and disseminate them in various parts of the Bog; these, with the assistance of particles of clay and mud, together with the peculiar properties that some waters have of promoting vegetation, will take root amongst the heath, and partial spots on the surface of the Bogs will assume a degree of verdure; other parts, where the clay and mud is not deposited in sufficient quantities, will perhaps give way to the increasing growth of moss.

In this operation the result will be tedious, and, in some instances, the effect uncertain; and it would be requisite to have persons constantly in attendance to regulate the distribution of the waters; it will not answer for any crop but grass, and it would be a considerable length of time before it could be brought to that state of perfection to admit of cattle grazing on it.

Fiorin grass, so highly and justly recommended by Doctor Richardson, will no doubt thrive in bogs. It certainly is a useful discovery, and may be cultivated to great advantage in particular situations; but I am of opinion, that so far as is applicable to the reclaiming large tracts of Bog, it may be considered more in the nature of a botanical or agricultural experiment than practically useful; for although this grass may grow in the middle of a soft bog, yet that Bog will not answer for producing any other crop, unless it undergoes a very different process of cultivation to what fiorin grass is said to require, and to which the mere planting of this grass will very little contribute, something more substantial being wanted. Therefore this mode of reclaiming Bogs will not admit of any variety in the crops, nor will it be suitable for grazing, because the cattle could not get footing; it might answer for meadow along the exterior edges, but in the interior of a large Bog, the difficulty and the expense of obtaining it would amount to more than the value of the hay.

From the many experiments made on a small scale by individuals, and from the information already before the Commissioners, there cannot be a doubt of the practicability of reclaiming bog; a surface dressing and burning, with a slight mixture of clay, will produce a crop or two; but it immediately begins to degenerate into unprofitable vegetation, and will not, like other lands, acquire renovation from rest. The grass which it produces does not afford nutriment to the cattle equal to the grass on upland, and the surface being tender will always be liable to break in holes under their feet, particularly in wet seasons; an evil that will every day increase, until the surface dressing is renewed, and another mixture of clay added, which will be requisite as often as the crop is repeated.

This seems an easy process, but it has seldom been carried to a degree beyond what was calculated on for one or two crops, in the most favourable places; near the upland, and perhaps where the peat has been partly cut away, the effect is not permanent; the same operation must be repeated as often as it is broke up for tillage, or the ground will be unproductive; it will therefore be necessary to consider how many repetitions will produce a permanent and perfect result.

I am of opinion that large tracts of red Bog will require a greater portion of clay than has generally been allowed to counteract the antiseptic properties, and in other respects make it fertile; the advantages will be much more substantial and the profits greater in proportion to the sum to be laid out, provided the process was to be carried to a greater extent, and perhaps this may be done on some plan that will not cause much augmentation of capital.

I will suppose one inch thick of clay or manuring gravel necessary to commence the cultivation after the surface is levelled and trimmed, which ought to produce two or three crops. Another half inch during the third or fourth year, and so on, that at the end of every three years there should be at least an additional half inch of clay or manuring gravel for the space of perhaps thirty years, at the expiration of which there will be five inches or more (because the turf mould will mix with it) of fine rich mould, upon the entire surface of Bog; it might then be classed with the generality of lands throughout the kingdom, and by continuing the same steps may become superior almost to the best land.

There may be difference of opinion respecting the precise thickness of clay which it is proper to lay on, but probably all will agree, that a deep rich soil or mould will be most productive; the quality of the proposed lands will depend more on the quantity and selection of the materials they may be composed of than on the effects of draining.

(5.)

EXTRACTS
from the Appendixes to
preceding Reports.

Rep. III.
Mr. Townsend.

Five inches or more of gravel and clay could be laid on in less than thirty years, if it was absolutely necessary to complete it within a shorter period; but by bringing it in gradually it serves as a manure, and thus thirty or more successive crops of corn may be produced, the tillage constantly enriching the land; so that the last crop will be greatly superior to the first, the annual value of which will leave a considerable surplus over and above the expense of the improvements, together with paying a moderate rent, and in time a valuable estate will be created from unproductive wastes, and the capital repaid tenfold.

By steady perseverance and proper management Bogs may be improved, so as to be equal to the most productive lands in the kingdom; and I would advise, that a system of operations should, in the first instance, commence, with a view to attain so desirable an object, rather than to proceed upon a narrow limited scale, or such as would not afford the opportunity or means of bringing the Bogs to a complete state of cultivation, which when accomplished, the mode of farming may be left to the option of the occupier, as there will not then be any further actual necessity to continue the addition of manuring clay; but I think it probable that the farmers would still persevere in that system.

If this business should ever be proceeded with on the broad scale of a national concern (and it will hardly ever be made to answer on any other,) then a plan must be adopted, which will not only be suitable to the general purposes of reclaiming all the bogs in a substantial and perfect manner, but also to have a view to promote the interests of the country at large; otherwise, if left to individuals, every one will proceed upon such a plan as may suit his convenience, circumstances, and situation, but always labouring under some disadvantage, which could either be avoided, or at least would not be an obstacle on the large scale.

The conveyance of clay and gravel is an object of the first consideration, because on the application of these principally depends the successful issue of this important subject.

It is in some cases recommended to make roads and to bring the clay on cars from the nearest lands that will furnish it of a proper quality; this will be an expensive way of gravelling the bogs, independent of making and upholding the roads. A wet season would greatly retard, if not put a stop to the execution of the work, as a loaded car could not be moved off the gravelled road into a soft bog without further preparations.

Railways, either of cast iron or wood will greatly facilitate the conveyance of manuring gravel into the bogs, and for short distances will perhaps afford the cheapest conveyance.

Small canals and railways will afford every convenient necessary for completing the proposed undertaking, and will certainly be the cheapest system.

If navigable drains are to be made in any stage of the business, I would advise their being made in the first instance; and also to construct them on the plan of a connected system of navigation.

One obvious reason for commencing with canals, is the great advantage of conveying manuring gravel at a cheap rate, a coat of which must unavoidably be put on, that will weigh more than one hundred years production of the space it is spread on, even if a crop is taken off the reclaimed bog every year.

The most lucrative canals in England are those, where heavy materials are conveyed on them, such as coal, lime, limestone and manures; corn and merchandize in general form only a minor part of their revenue.

If it is not a connected navigation, the expense of cultivation will be rather increased than diminished, because boats and utensils must be provided for every separate bog, and must be built on the spot and taken to pieces again when they are done with; a boat that will carry 15 or 20 tons, cannot be removed by one or two men from one bog to another so readily, and it would be useless to leave it where only one limited solitary drain was navigable.

I have seen the experiment tried, of removing boats over land, and it was both too troublesome and expensive to be repeated.

A regular navigable communication will give opportunity for one set of boats to be brought to twenty different bogs or more, and when not wanted for that business, they may change their employment without the least inconvenience, as by means of canals, there will be an opening to almost any part of the kingdom, which consideration would encourage hundreds to build boats with a view to get employment in the bog improvements, and also for general purposes of trade; manuring gravel can be brought several miles if necessary in boats at a very easy expense, on which account, the choice of materials will not be limited to the nearest place, in case the stuff surrounding the bog should not be of a desirable quality; an advantage which should not be overlooked, because the future fertility of the bogs in a considerable degree depends on the selection of the manuring gravel or stuff to be laid on.

Should a general system of navigation be acted upon, it will not only afford the cheapest means of executing the bog improvements, but will essentially serve the country at large, by opening a channel for the easy conveyance of lime, turf, coal, corn and merchandize, contributing not merely to the improvement of the bogs, but to the improvement of every part

part of the kingdom, increasing the industry and wealth of the inhabitants, and will make the interior of the kingdom a kind of nursery for seamen.

To proceed with the actual reclaiming of the bogs in Ireland will be an object of incalculable advantage to the United Kingdom, by adding upwards of a million of acres of fertile lands to the present agricultural produce of the Island, and thereby increasing the quantity of food, probably one-tenth or more, an object of the highest importance for the increasing population of the country; it will give employment to immense numbers of labourers, and afford numerous opportunities for farmers to exercise their industry and capital in improving their native soil, rather than emigrate to America, as hundreds do every year from Ireland, particularly from the north.

The Imperial Parliament will, no doubt, take the subject into serious consideration, and give all the encouragement that it may appear worthy of; and, as a national concern, perhaps there are few, if any, undertakings of a public nature more deserving Parliamentary assistance.

It will be a work of time and industry, and will require considerable capital to accomplish; however, by proceeding gradually and perseveringly with the undertaking, and considering the object to be attained, I think that a comparatively small grant would eventually answer the purpose.

I cannot form a near estimate of the quantity of bog throughout the kingdom; there are thousands of acres under the extent described by the present enquiry; but, taking it on a supposition to be one million of acres, which perhaps is rather under than over the actual quantity, the total sum at the first view appears so enormous, as seemingly to preclude the possibility of its being put in practice, for if we take the average of expense per acre for drainage and cultivation, at £.10, then the total sum will be ten millions sterling.

So prodigious a sum for such an undertaking may cause some persons to consider it a romantic scheme, and under that impression the bogs might for ever lie dormant; however, there is a more cheering prospect; for undoubtedly the first guinea to be laid out will become the source of a never failing accumulation of wealth; the final result of which will be the converting of unproductive wastes into an estate that will eventually produce a certain revenue of upwards of two millions sterling per annum.

The sum of about one hundred and twenty thousand pounds will be sufficient to reclaim all the bogs in Ireland, to be laid under the direction of Commissioners in such ways as the discretion of the Imperial Parliament may determine on ordering.

I will suppose that the Commissioners commence with reclaiming 4,000 acres of bog, which, according to a full estimate for cultivation, purchase from the present proprietors, and contingent expenses, allow to engage a capital of £.60,000, or one half of the grant.

They should also direct the first agricultural steps, and occupy the new lands for two years, at the expiration of which there cannot be a doubt it will let for from 15 to 20 shillings per acre; the total rent will then amount to from three to four thousand pounds per annum at the least.

This property, with the advantages of progressive improvement and consequent increasing value, would unquestionably sell for £.75,000, which sum the Commissioners will have an opportunity of raising by the sales of the first reclaimed bogs; whilst the second 4,000 acres is proceeding with and perfecting, so as to be disposed of in a similar manner.

By the sale of these 8,000 acres, the Commissioners, it is presumed, will have at least £.150,000 at their command, which will enable them to engage on reclaiming 10,000 acres, one half of which, at the before mentioned value, will produce from four to five thousand per annum, and at the same rate of sale, will make a sum of £.90,000; therefore, when 18,000 acres are reclaimed, the capital or stock will be worth one hundred and eighty thousand pounds and upwards.

Proceeding upon this computation, until one hundred thousand acres are reclaimed, the Commissioners would have a fund that will enable them to engage on 30,000 acres at one time.

Parliament will decide whether it will be prudent to continue this scheme beyond a limited extent, because if there should be any difficulty in meeting with purchasers, the new lands could not be sold to so much advantage; and even if they were sold satisfactorily, quere, whether the Commissioners could possibly proceed on such an augmented scale, with the future reclaiming and improvements.

I should therefore beg leave to suggest, that instead of making periodical sales of all the bogs which they may be enabled to reclaim, only to sell as much as will always keep a floating capital, equal to whatever sum the Imperial Parliament may in their high wisdom think proper to put at the disposal of the Commissioners, and that the acres undisposed of shall be let at a fair and equitable rent.

The revenue arising from the improved bogs remaining unsold, to be applied by the Commissioners to the further reclaiming of bogs, and either to be added to the original grant, or otherwise appropriated to perfecting the first rudiments of reclamation.

The increasing revenue and constant enlargement of the estate, will accumulate so rapidly, that the original fund will be swelling to an immense degree of wealth, beyond any thing

(5.)

EXTRACTS

from the Appendixes to
preceding Reports.

Rep. III.

Mr. Townsend.

(5)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. III.
Mr. Townsend.

that might be imagined from the present state and appearance of the bogs; so that independent of the general benefits which the United Kingdom will derive by the proposed measure of converting these extensive tracts of unprofitable wastes into productive agriculture, giving employment and subsistence to thousands, extending the beneficial effects of navigation through the Island, &c.; the nation will be amply repaid any grant that might be ordered by Parliament, and a very considerable surplus will be left at the disposal of government for any national purposes.

There is an Act of Parliament of the 5th of George the Second, chap. 9, intituled, "An Act to encourage the Improvement of barren and waste Lands and Bogs, and planting of Timber Trees and Orchards," in which it is enacted, that where there is an undivided bog or disputed mearing or boundary, any of the proprietors can call on the sheriff of the county to appoint a jury to examine into the claims of the parties within a limited time, whose decision is to be final and conclusive in respect to the division or allotment of each proprietor's share of the bog.

Should the bog improvements be entered into, this Act will be essentially useful, as there are great numbers of bogs where the boundaries of property are not ascertained.

After the extent and boundaries are settled, the Commissioners would probably proceed to a valuation of the bogs in their present state, and either to include the turbary, or let it be reserved by the present proprietors, with restrictions as to the cutting of turf or peat, not to endanger or obstruct the proposed works.

It will likewise be necessary to ascertain the value of those lands where clay, manuring gravel or limestone, is to be procured.

These valuations, to be determined by a jury impanelled by the sheriff of the county in which the bogs are situated, in the same manner as the value of lands are ascertained for canals and other public works.

Many hundreds of acres may be reclaimed without trespassing on the proposed funds of the Commissioners, if Parliament granted them the power of making leases to such persons as could be depended on, who would undertake to reclaim and cultivate particular parts of the bogs, paying an annual rent to the Commissioners, commensurate with the sum to be laid out, the terms of the lease, quality, situation, and local circumstances of the bog. The mode of improvement, quality of materials, &c. to be directed by the Commissioners, and expressed in the lease; there are numbers of persons residing on the borders of the bogs, who would be glad of an opportunity of cultivating considerable quantities on these conditions.

Before any improvements are begun, it may be desirable that requisite portions of each bog should be allotted to the clergy or impropiators, in lieu of tithes. This apportionment might be determined either by a jury of the county, or Commissioners to be especially appointed by Parliament, or some plan similar to that which is acted upon in the inclosure of the fens in Lincolnshire. The present proprietors of tithes will then be fully compensated for their interest or claims in the bogs, and the improvements will be carried on in a more satisfactory manner, when freed from tithes.

EXTRACTS FROM THE APPENDIX TO THE FOURTH REPORT.

REP. IV.—Memoir of Professor *Wade*, on the Vegetable Matter of Bogs.

Memoir of Professor WADE on the Vegetable Matter of Bogs.

Sir,

Florinda Place, Lower Dorset-street,
December the 30th, 1811.

IN obedience to the wishes of the Commissioners appointed for the Draining of the Bogs of Ireland, communicated to me, through you, Sir, as their Secretary, "That I would favour them with a Statement of any Observations I may have made on the Vegetable Matter of which the Bogs of Ireland are composed, as well as on the Plants growing thereon; adding my Opinion upon the different sorts of Grain, or true Grasses, which I conceive best adapted for the crops upon the Reclaimed Bog; and any Remarks I may have made on the subject of the Reclamation of Bogs;"—

I have the honour of informing the Commissioners, that not having considered the subject ever maturely, in a national point of view, I have nothing material to offer, or perhaps worthy of their attention at present; my progress heretofore through certain boggy districts in Ireland, being merely to ascertain their vegetable produce, with a botanical intention.

In this point of view, then, necessarily limited, accompanied with a few Remarks, perhaps in some respects irrelevant and extraneous, and arranged under certain heads, I humbly offer, with very great diffidence, to the attention of the Commissioners.

Mosses,

Mosses, Lichens, and Ferns.

Mosses:

It is well known that all boggy grounds are not only thickly covered over with mosses, but that in a half-decayed state, they in a great measure contribute to their solidity; for it is not from mosses alone that turf is derived; even whole trees form the composition of turf beds.

The Bog Moss (*sphagnum*) in its different appearances of whiteish yellow, rose colour, and green, appears to be the most predominant, and performs the chief share in the generating of Turf Bogs. The Great Golden-hair Moss (*politrichum*) seems to be the next. Many species of Feather-Moss (*hypnum*); Thread Moss (*bryum*); Spring Moss (*mnium*); besides many other kinds, lend their assistance.

The geographical extent of mosses is very remarkable, and appears to be rather interesting. We find them on the southern sides of the most barren rocks; likewise in other sunny situations; on pure dry sand, on bare quartz, on rocks of porphyry and granite, on calcareous rocks, on slate, on gypseous soils, on the sides of pit coals, argillaceous soils, &c.; even rivers, brooks, and springs afford several species; and it is very remarkable, that they grow very luxuriantly on soils which contain iron ochre or marcasite. Mosses appear to require a much lower temperature, and a more rough climate than most other vegetables. Their most vigorous growth and propagation are in the spring and autumn: in low situations, they are seldom or never seen in the middle of summer, heat impeding their vegetation. It is observed that in polar regions, where the snow never thaws more than a few inches deep, mosses and lichens are the vegetable productions only to be met with.

It is remarkable, that the power of elongation, which is very striking in many of the mosses, which for the most part are perennial, does not so much belong to their roots, as to their stalks and creeping branches; and I am inclined to doubt, whether any of the moss tribe are annual, and propagated by means of seeds only. The leaves of mosses never drop off at certain periods, but generally remain as long as the stalks and branches.

It is by no means the case, as generally supposed, that mosses impoverish the ground on which they grow; they grow best in barren places, and love cold and moisture, as before observed; hence they cover those lands with verdure, which would otherwise remain bare; and so far from injuring the plants which are found growing with them, they afford them protection, their roots penetrating to so shallow a depth into the ground, that they take from it little nourishment. Wherever a small quantity of grass is seen with mosses, there would be none without them; and if the land is drained and aptly manured, it will be seen that the moss is no impediment to the growth of the grass, for the moss soon disappears, and the grass flourishes.

Mosses retain moisture for a length of time without rotting, and from this quality, worthy of attention in many points of view; and it is singular, that no moss has been discovered, liable to the attacks of insects or worms.

The chemical analysis of mosses seems only to furnish some gummosse and extractive matter, and combined with those, the gallic acid is found in some of them as our common Golden-hair Moss (*polytrichum*); and from the known astringent properties of mosses, perhaps some of them might be worth trying in tanning. A considerable proportion of calcareous matter is found in some species of Feather Moss (*hypnum*); and there is a species of moss (*targionia*) sometimes found in our Bogs, but sparingly, which on being cut into pieces, emits a strong smell of turpentine, a proof that it contains an essential oil; or in other words, that its proper juice contains carbonated hydrogen, from the diffusion of this turpentine-like smell.

Lichens:

Many species of Lichens are to be met with in Bogs. The Rein-deer Lichen (*lichen v. bæomyces rangiferinus*) so called from the rein-deer living entirely upon it, and who constitutes the whole economy of the Laplander, is to be found in abundance on our heathy Bogs. The different species and varieties of the Cup Moss (*lichen v. bæomyces pyxidatus*) tipped with their beautiful and conspicuous scarlet tubercles, are likewise to be seen adhering to the turfy surface; as well as the Heath Moss or Lichen (*lichen ericetorum*); the Ground Lichen, or Ash-coloured Ground Liverwort (*lichen caninus*); and many other species.

Permit me to observe, that these apparently vegetable excrescences abound in every part of the world; the most barren rocks, in the very northern parts of the globe, are incrustated with them; the barest and hardest masses of granite and porphyry derive from them their first rudiments of vegetation. The Crisp Lichen (*lichen paschalis*) abundant on our high rocky mountains, has been found a very few years ago, near Mount Vesuvius, on a torrent of lava which issued in 1771, most copiously covering it, and appearing like hoar frost, with no other vegetable near it, and as it would appear, forming on the hard surface of the lava the beginning of vegetation. Many species are seen above 2,000 feet above the level of the sea; the barren surfaces of the masses of granite and porphyry of the primitive mountains, have peculiar lichens growing on them; indeed many prefer granite and porphyry rocks, on the hardest rock crystal, on mica, on sand stone, on basalt, on gneis, on marble, on shistus, calcareous rocks and old walls coated with lime, breccias and rocks of quartz, on arid heaths and mud, moist coarse clay, barks of trees, &c.; even in mines under ground, several

(5.)

EXTRACTS
from the Appendices to
preceding Reports.Rep. IV.
Professor Wade.

(5.)
EXTRACTS
from the Appendices to
preceding Reports.

Rep. IV.
Professor Wade.

several species have been discovered. It may not be stretching the point too far, to observe, that many lichens, in a geological point of view, may afford land-marks for the detection of certain minerals.

The various economical uses to which many lichens are applied, merit much attention; such as in dying; most of them affording a considerable quantity of colouring matter, and which being merely extractive, is soluble in water, and obtained by simple infusion, which is fixed either by acids, urine or alum. By lime and ammonia, the colouring matter of lichens, if they have any, will be developed, or the process may be simplified by substituting sal-ammoniac for ammonia. Many lichens afford a gum by certain processes, as transparent and tasteless as gum-arabic, sometimes amounting to one-eighth of their weight. Some contain a considerable portion of the tanning principle; others afford medicine and food for man and beasts, as the eatable Iceland or Eryngo-leaved Lichen (*lichen islandicus vel citraica islandica*) to be found growing on our high mountains; the Reindeer Lichen, as noticed before, and many others.

Ferns:

A few species of the Fern tribe are to be found growing in our bogs, but only occasionally. In certain boggy districts, I have met with the Osmund Royal, or great Flowering Fern (*osmunda regalis*); the Male Fern (*aspidium filix mas*); the Female Fern (*aspidium v. anthyrium filix femina*); common Hart's Tongue (*scolopendrium vulgare v. officinale*); Northern Blechnum or Rough Spleenwort (*blechnum boreale*); common brakes (*pteris aquilina*); some species of the Horse-tail (*equisetum*); common, and Fir-club Moss (*lycopodium clavatum*, and *selago*).

In the cellular texture of ferns are found much crude oxygenated juices, containing a much larger proportion of saccharine matter than is usually found in other plants.

Several ferns are eatable, some foreign species in particular, containing a considerable proportion of saccharine matter, gelatine and mucilage; the inhabitants of New Zealand feed upon the roots of many of them, and in the East Indies the same part is used for food; our common Polypody (*polypodium vulgare*) rarely to be met with in our bogs, contains, besides, astringent extractive matter, in which the gallic acid is predominant; a great quantity of mucilage and sugar: the same constituent principles, but combined with resinous extractive matter, are found in our male fern, in brakes, in hart's tongue, &c.

In many of our common ferns, the gallic acid is so predominant, that an infusion of some of them, upon being added to a solution of sulphate of iron, or green vitriol, immediately produces a precipitate of a dark brown colour. The peculiar and often very intense smell diffused by ferns, when a fresh stalk is cut across, proves the presence of an essential oil, indicating thereby a combination of water and carbon, such as exists in aromatic plants containing essential oil. That ferns yield potash after combustion, is a circumstance well known; but they likewise furnish oil, or in its place, resinous extractive matter, combined with potash in such quantity, that the ashes of our common brakes made into balls, is used as a substitute for soap; that tannin, or the tanning principle, is also contained in ferns, appears from the use to which the roots of some of the common species I have mentioned, are applied by tanners.

The few chemical facts I have advanced with regard to mosses, lichens and ferns, and into which I have been led almost unknown to myself, from the importance of the subject, should be received by the Commissioners with caution and hesitation; coming more immediately under the observation of the able, industrious, and experimental chemist; I trust, however, they will have this tendency, to induce and court investigation.

Meadow and Pasture Grasses.

I have no doubt but most of our good grasses may be cultivated on reclaimed bog; some of them I have occasionally met with in bogs, in their unreclaimed state, as the White Hayseed Grass (*holcus mollis et lanatus*); the highly valuable Cock's Foot Grass (*dactylis glomerata*); the rough-stalked Meadow or Bird Grass (*poa trivialis*); the smooth-stalked Meadow Grass (*poa pratensis*); the Meadow Fescue Grass (*festuca pratensis*); the tall Fescue Grass (*festuca elatior*); the celebrated and fashionable creeping Bent Grass, or Fiorin (*agrostis stolonifera*) is known to be abundant in bogs. But the one I consider as the most valuable, in every point of view, is the Foxtail Grass (*alopecurus pratensis*). I have never met with a single specimen in boggy districts; indeed it would appear likewise to be a very local plant; for if recollection serve me, many counties in Ireland are destitute of it.

The custom of sowing what are called common hay-seeds on any ground (in general the sweepings of hay-lofts, as introducing useless and noxious weeds) I must highly deprecate as a very slovenly method, and can tend to no advantage or permanent improvement whatsoever. The valuable and good hay-seeds, including darnel or ray-grass, with Pacey's variety (*lolium perenne*) can be easily collected by the hand at the time of hay-making, and sowed at the proper season, perhaps both in spring and autumn; indeed I conceive they cannot be sown too often*.

In a natural botanical arrangement of Grasses, wheat, oats, barley and rye are included. On their cultivation in reclaimed bogs, I cannot hazard any opinion; certain it is, however,

* All the different species of Grasses may be seen in the Dublin Society's Botanical Garden.

that oats have been cultivated with success on such grounds; and it is only by a well-conducted series of experiments, and rather on an extended scale, bogs varying so much in their composition, and I may add, their constitution, even in the same bog, that the successful cultivation of the other species of grain can be ascertained.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Professor Wade.

Artificial Grasses:

Under this head it will be sufficient to notice our red and white Clovers or Trefoils (*trifolium pratense et repens*); St. Foin (*hedysarum onobrychis*); Lucern (*medicago sativa*); Chicory (*cichorium intybus*); our common Vetch (*vicia sativa*); and Buck-wheat (*polygonum fagopyrum*). Other species of clovers, trefoils, vetches, and herbaceous plants, might be enumerated, as affording food for cattle, and thriving on reclaimed bogs, as the Hop Trefoil (*trifolium agrarium*); Bird's Foot Trefoil (*lotus corniculatus*); Trefoil, so called (*medicago lupulina*); Bush Vetch (*vicia sepium*); Tufted Vetch (*vicia cracca*); Yarrow (*achillea millefolium*); Burnet (*poterium sanguisorba*); &c. &c.

Red Clover:

We find it is capable of being cultivated with success and advantage on all the more heavy and dry descriptions of land; and it is said to succeed on the deeper kinds of gravelly and sandy soils; it is frequently cultivated on deep bogs which have been cut out; and in certain districts in this kingdom, the chief top-dressings appear to be coal ashes and soaper's waste.

White Clover:

This highly valuable clover, so common almost every where, is said to be surprisingly encouraged and increased by merely spreading ashes of any kind over it; it is found to succeed well on the more rich and dry, sandy and loamy soils, as well as on all the clayey and turfy descriptions of land, where they have been well drained from moisture.

St. Foin:

The cultivation of St. Foin is hardly known in this kingdom, though acknowledgedly so important and useful. It is known to last very long on poor barren soils; and turf-ashes and soot appear to be the best manure for it. It is capable of producing a large product, even on the poorest description of land, and therefore worthy of being tried on reclaimed bog, for it is by no means confined, in respect to soil, as has been so generally supposed; but as calcareous grounds of every species seem peculiarly fitted to it, the occasional application of lime has been known to succeed admirably in promoting its quick and abundant growth; and further, a considerable degree of dryness is essential to the healthy vegetation of St. Foin.

Lucern:

This valuable artificial grass, cultivated with so much profit and advantage in many parts of England, as affording a quick and large produce of succulent green food for the support of different sorts of stock, and likewise hay for the winter fodder of horses and other cattle, is likewise hardly known in Ireland: whether it will succeed on reclaimed Bogs remains to be determined; but it is highly worthy of being tried on such grounds. The soils most suitable to its culture are those of the more deep, rich and drier kinds; as the sound, mellow, loamy, gravelly and sandy descriptions; but on such as are retentive of moisture, it is advised never to attempt it. Horse dung, in a proper state, appears to be the best manure for it; earthy composts, ashes and soot have been used, but they are apt to bring up the common grasses too much.

Permit me to make this general observation, sanctioned by the experience of the most intelligent farmers in England; that saintfoin will grow on gravelly and stony lands; clovers, on clays; and lucern, on light loams.

Chicory:

This herbaceous, succulent, stately perennial, is highly worthy of being cultivated, by way of trial, in reclaimed Bogs, for the food of cattle; we know it is capable of being grown on most of the loamy descriptions of soils, and even in some of the more light poorer kinds; but succeeds best in such as are not too retentive of moisture, though it has been found to succeed in a good strong wet loamy soil, sown with other crops; it defies drought in a remarkable degree; the most severe cold does not injure it; and to encourage us still further, chicory is known to thrive on any soil, if it comes up, as it may fail from a defect of seed.

Vetches:

Are known to be of the most infinite importance, either green or dry, in the feeding of horses, cows, sheep, and hogs; in short no artificial food is considered at this day equal to them. The prospect of their thriving in reclaimed Bog is, that in respect to soil, vetches admit of considerable latitude, growing on all the varieties without difficulty, from the thin gravelly to those of the deep and stiff clayey kinds, but certainly flourishes in the most vigorous manner on those gravelly loams that are not too moist.

Buck Wheat:

Is a crop not at all known in Ireland; but by good farmers in England is considered as very valuable for feeding horses, fattening hogs, and keeping poultry. They observe, that

(5.)
EXTRACTS
from the Appendices to
preceding Reports.
Rep. IV.
Professor Wade.

that it is capable of being grown on most soils, provided they be sufficiently dry; thin sandy soils seem to answer well. Buck wheat is sometimes ploughed in as a manure with other succulent crops, a method far from being sufficiently practised or understood, as the means of obtaining rich vegetable manure; and in the practice it is suggested, that great advantages might be obtained by the spreading of lime or turf mould, and likewise ploughing them in. Quere.—Should a crop of buck wheat be tried on reclaimed Bog?*

Hemp:

It is now satisfactorily ascertained that hemp (*cannabis sativa*) can be raised on boggy grounds judiciously prepared, and becomes a valuable crop. In its cultivation, I would recommend a due mixture of male and female plants, should the saving of the seeds be one object; as without this mixture of male and female plants, the seeds will be unfertilized, and of course unproductive.

Flax:

Small patches of flax (*linum usitatissimum*) are frequently to be seen cultivated on the edges of Bogs.

Esculents:

Many are known to thrive well on boggy earth, or with turf-mould; as potatoe (*solanum tuberosum*); the different varieties of cabbages, turnips, and cole (*brassica*); carrot (*daucus carota*); parsnip (*pastinaca sativa*), &c.

Shrubs and Trees:

Very few kinds or species are to be found growing naturally in Bogs; and to notice those of ancient timber, shrubs or herbaceous plants, which have been recognized by the different enquirers into the subject, in their fallen or semi-putrescent state, in the deep recesses of Bogs, occasioned by a variety of causes, does not, I conceive, come under my immediate enquiry or duty.

The sweet-scented gale, Dutch or bog myrtle (*myrica gale*) used in some countries instead of hops, and for tanning calf skins, is very abundant in many of our Bogs.

The marsh andromeda or wild rosemary (*andromeda polifolia*) is rather common in the Bog of Allen and many other Bogs; perhaps it is injurious to our sheep, who may have an opportunity of occasionally browsing on it; there is a species very common in North America, and there called broad-leaved moor-wort (*andromeda mariana*) the leaves of which have been found to be highly poisonous to sheep.

The delicate creeping cranberry (*vaccinium oxycoccus*) with its fair little assemblage of rose-coloured flowers, is likewise rather common in the Bog of Allen and other Bogs. The Swedes use the berries to boil silver plate to its proper whiteness.

The heaths to be met with in our Bogs, are the fine-leaved (*erica cineria*) the most common; the common erling (*erica vulgaris*); and cross-leaved (*erica tetralix*), which is by no means so common as the other two. I must not omit our truly indigenous beautiful species, the Irish, or Saint Daboec's heath (*Erica Daboeci v. menziezia polifolia*), so peculiarly common in the spongy, though not absolutely boggy grounds of Cunnamara, county Galway.

The common spreading willow or water sallow (*salix aquatica* of Smith) is the only species of this genus I recollect growing commonly in Bogs. It is well known that our indigenous species of sallows, willows and osiers, with a few exceptions, delight and grow luxuriantly in marshes and on the banks of rivers; and I have no hesitation in saying, that some of our best and most valuable species, as the common white willow or timber sallow (*salix alba*) the crack willow (*salix fragilis*); the Bedford, Leicestershire or Dishley willow (*salix ruseliana*), the bark of which is considered so peculiarly good for tanning; and the common osier (*salix viminalis*), may, under proper management, be cultivated in boggy districts.

Willow pollards are planted with great profit by the sides of brooks and rivulets; and it is asserted by the most experienced planters, that they will grow in other situations with similar success, as wet and boggy grounds, &c.

It is observed that the red (*s. pagilis*) and white willow will grow well in all fenny situations, moor, or moss or wet or low lands, or any kind of clay, loam or mixed soils, but should never be planted on any high dry or burning lands.

The osier, as I observed before, delights in drained moors and the banks of large rivers; it has no dislike to being flooded occasionally, but seems to be invigorated by such irrigation. In the fens of Cambridgeshire, large plantations of osiers are raised with great success. The cultivation of the osier has been found to be very profitable on low lands, from being overflowed by floods, and which are often incapable of being applied to other uses, from the stagnant water converting them into a kind of swamp. Moderate moisture certainly is favourable to the production of fine trees, but water continually stagnant may be considered as ruinous, according to the best authorities.

* The different artificial Grasses are to be seen in the Dublin Society's Botanical Garden, Glasnevin.

Our common Sallow, or great round-eared Willow (*s. caprea*) is worthy of being noticed, though it in general prefers rather a dry than a very moist situation; its bark being of late recommended for the same purposes as the Peruvian Bark; and, in its green state, is used for making coarse paper and parchment.

The common Alder (*betula alnus*) flourishes in all our boggy and marshy districts; it is asserted, that if the Alder is planted in a low meadow, the ground immediately surrounding it will become boggy; and it is somewhat remarkable, that it will not thrive in certain descriptions of calcareous soils; its capability of living under water for a considerable length of time uninjured is well known, as well as the astringent properties it possesses, and therefore may be useful in tanning.

The Scotch Fir (*pinus sylvestris*) the only species of the whole tribe which can be considered as a native, appears to grow well in some boggy grounds; not that I have ever seen it in a state of great luxuriance in such situations. It may perhaps be unnecessary to mention, that the bark of the Scotch Fir is used in tanning leather; that most, if not all, of our old bogs are entirely filled up with the roots and stumps of this Fir, and that it should be cultivated in all waste grounds.

The common Larch (*pinus larix*) a native of Siberia, appears to thrive well in reclaimed boggy grounds; likewise the Norway Spruce (*pinus abius*) a native of the north of Europe.

Perhaps it would be well to ascertain whether the highly valuable Weymouth Pine (*pinus strobus*) a native of North America, which we are told often attains the height of above 200 feet, and has exceeded in multiplying itself, and that very expeditiously, by engrafting the branches on the trunks or stems of our common Scotch Fir, just noticed, would grow on reclaimed bog. Indeed, some other species merit our attention in this point of view, especially when we consider the attachment some of them have to the extensive swampy districts of cold and barren countries.

I have seen plantations of the Oak (*quercus robar*) on reclaimed bog; but they certainly had not that healthy and encouraging appearance as in other situations; and it is universally allowed, that the Oak thrives better on hilly than in boggy grounds.

It may not be amiss to state here what is so universally known and adopted in England; the superior advantage of propagating the species with sessile leaves and pedunculated acorns; that is, the leaves almost immediately growing on the branches, without the interposition of what are called petioli or leaf-stalks, and the acorns on elongated pedunculi or fruit stalks; this is what is called in England, the true British Oak for naval purposes.

On the propagating of Oaks in boggy grounds, it may be encouraging to remark, that many fine species are to be met with growing luxuriantly in a truly wild state in immense watery plains, or such as are occasionally exposed to inundations in North America; as the Water White Oak (*quercus lyrata*); the swamp's Chesnut Oak (*quercus prinus*); the live Oak (*quercus vivens*); perhaps one of the hardiest of the whole tribe, bearing the most rigorous seasons, and likewise the heat of the most scorching sun; the willow-leaved Oak (*quercus phellos*), &c. &c. The "*Histoire des Chenes de l'Amerique Septentrionale*," by Michaux, is well worthy of attention on this subject; a translation of which has lately appeared, published under the auspices of the Dublin Society.

I have now, Sir, finished what I had to communicate to the Commissioners, for the present, on the subject of their enquiries, committed to my charge.

Should the Commissioners require a full catalogue of the different herbaceous plants, which are to be found growing wild in the Bogs of Ireland, I shall feel great satisfaction in complying with their wishes.

I have the honour to be, Sir,

Your obedient servant,

Walter Wade,

Professor and Lecturer on Botany to the Dublin Society.

Bucknall Marcarthy, Esq.

Secretary to the Commissioners for considering the practicability of draining the Bogs in Ireland.

REP. IV.—Mr. Nimmo, on the Bogs of Iveragh in the County of Kerry; Observations on the Formation of Bogs, on the Peculiarities of the same in a Mountainous Country; various Plans for irrigating, warping, course of Crops, comparison of Expense, &c.

Mr. NIMMO, on the Bogs of Iveragh, in the County of Kerry.

BEFORE proceeding to describe the works which I should recommend for the cultivation of these extensive wastes, it may not be improper to explain the grounds upon which my opinion of their efficacy is founded.

I have, in examining different parts of this district, taken some pains to discover what were the mechanical causes which facilitated the original formation of these extensive Mosses;

(5.)

EXTRACTS

from the Appendices to
preceding Reports.

Rep. IV.
Professor Wade.

Reasons for adopting
proposed works.

(5.)

EXTRACTS

from the Appendices to
preceding Reports.

Rep. IV.

Mr. Nimmo.

Bog prevented from
accumulating on banks
of streams,

not owing to fall,

nor to drainage only ;

still less to permanent
moisture ;

but to irrigation.

Its effects,

may be produced by
purest water ;or even that of the
Bogs ;

Mosses ; and although my success in this has not been so great as to enable me to pronounce positively upon the formation of bog in general ; yet, in many instances, I think I can yet speak with tolerable certainty, both as to the causes which have favoured their original production, and the means of obviating their present sterility. In this I have been anxious to discover, and follow the proceeding of nature, rather than to save the trouble of investigation, by adopting the opinions already formed on the subject.

It is observable, that in all the rivers and streams which intersect these bogs, the accumulation of bog on their banks is prevented, and its place occupied by rich succulent pastures, at least in all places where the water runs with tolerable rapidity. Where, on the other hand, the stream is scanty and sluggish, the bog, whether the cause or the consequence of this condition, has grown into the water edge ; but even then, the bog is shallow at the water side, in comparison of its depth a little way off.

Now the mere fall or slope is not the only cause of this, since the bog-soil in this country extends a great way up the mountains, or rather, I should say, to their summits. On quick slopes, indeed, the turf is thin, but not more than it is on the dry plains. From this, therefore, I conclude, that merely sloping the surface, were that practicable, without altering the supply of water on it, is not enough of itself for the perfect reclamation of a bog. This observation I conceive of importance, for it shows that there is, for aught we yet know, perhaps the same difficulty in the reclamation of mountain bog, as of those upon plains.

Neither is the mere drainage the only cause of the grassy borders of the streams, since we see the edges of the turf-banks, although certainly dry enough, so far from affording pasture, are the most sterile spots that can be pointed out in the whole bog field. The edge of the banks of those streams, which cut deep in the soil, are also covered with heath only ; and the same thing may be observed of artificial ditches or draining. In this last, however, we frequently see good grass on the stuff which has been thrown up from the bottom, and some time exposed to weather.

From this, therefore, we may conclude, that mere draining these bogs, or at least that deep draining, is not enough for their reclamation. The tufts and thin banks that frequently occur among the turbaries, are certainly sufficient drained, yet they are not more fertile than so many masses of cork.

If we are not to ascribe the goodness of these pastures to their drainage, we have much less reason to account for it by the moisture which they enjoy. The interior of a shaking bog is wet enough, yet, though abundantly rapid in vegetation, it is of a kind which is either inaccessible or useless ; but there is this important difference between the supplies of moisture in the two cases :—The bog is almost constantly gorged up with water, which passes off only by evaporation or a very gradual soakage, and is either pure rain water, or that which, descending from more elevated sources, has already been filtered through the strata, or the higher parts of the moss. The meadow is supplied with water only during floods ; it passes quickly over it, carrying much sediment from the washings of the hills, and depositing it among the herbage ; when the flood has passed, the meadow is quickly dry, but water is never far off the roots of the plants. The meadow is therefore irrigated ; the bog is gorged or drowned.

The benefit of irrigation is supposed by some, to consist entirely in the mechanical effects of the water, as a carrier either of soil from the upper grounds, to be deposited in fine particles over the meadow, or of manure from farm yards or populous towns ; and we have, to be sure, abundant proof of its good effects in this way. Others conceive, that the chemical properties only of the water are of importance ; that it dissolves the particles of lime and other substances, and by corpuscular attraction parts with them to the vegetables or soils through which it passes, but that the water itself is no otherwise useful, than in so far as its decomposition furnishes that sap, and those gases, which are necessary for vegetable life, and that it is therefore chiefly of importance, when to be had, in dry summers, when the usual supply of plants is cut off by drought. Both parties are therefore particularly anxious about the quality of the water ; the one, that it may bring with it as much manure or soil as possible ; the other, that it may not bring acid, metallic or other solutions, and so tend to poison the plants, instead of nourishing them. But I think there is another point of view, in which we may conceive the very purest water to be useful to vegetation, provided it can be applied in sufficient quantity, and discharged at pleasure. The water, if so considerable as to reach the leaves of the grasses, may act by its detergent quality, in washing off their various feculencies, and promote the perspiration, and consequent health of the plant. In passing through boggy soil, it will tend to dilute and carry off the astringent principles, which otherwise check the decomposition of the vegetable matter. It will in like manner discharge those metallic and acid particles, which are considered as so injurious to the health of the living vegetable ; and if the field be alternately flooded and laid dry, the coarser aquatics, as the sphagna, junci, holsi, &c. give way to those which are adapted to these alternate states of dryness and moisture ; as the alopecurus, poa, festuca, and above all, the agrostis, or valuable “fiorin,” so much recommended by Dr. Richardson, and well known as one of the most abundant in the watered meadows.

In this way, we may presume, that the irrigation of the bog-soil, where practicable, will always be attended with benefit, whatever be the nature of the water (excepting only when that contains in solution the deleterious principles aforesaid.) Even the water which has already passed through the bog, will be useful by its detergent quality : it can part with nothing

nothing to one bog which it has already derived from another, unless we oblige it to do so by mismanagement in its application. This principle, if once established, will be particularly useful to us in our operations on the bogs; and the system itself appears peculiarly adapted to the situation of Ireland, where the peasantry are so active in the management of, and so much accustomed to the labours of the spade. In a grazing country, as this is, and is so particularly the case with the barony of Iveragh, the extension of the meadows is perhaps even of more importance than the increase of the corn culture. Though the harbour of Valentia is well adapted to the reception of ships of all descriptions, the effect it has hitherto had upon the agriculture of the district may be guessed at, from the circumstance of the bog growing down to the water's edge. Destitute therefore of a market, of roads, and wheel-carriages, this barony seems to have little temptation to increase its corn culture. The nearest grist mill that deserves the name, I had almost said the *only* one yet in Kerry, is at Killarney, 30 miles off. There are indeed two mills in Iveragh; they may be worth £. 10 each.

and is peculiarly adapted to this district.

It may appear strange, that I should propose irrigation as a remedy for those Bogs which appear to be at present useless only from their excessive wetness; but in so doing, I beg that I may not be misunderstood. The benefit of irrigation is necessarily connected with an effectual drainage; and from what I have already said, it may be seen, that I place my hopes of advantage in the rapid transmission of that water, which is at present injurious by its stagnation.

Is to be combined with drainage.

It must have appeared to every one who has visited such ground as that I now report on, that wherever there are roads or trackways along the sloping ground, and above the Bogs, there are considerable patches of good pasture below; these can frequently be traced as improvements on the Bog, consequent to the formation of the road. At all times we find that this is owing only to the overflow of that water which is collected by the road, as by a catchwater drain. It may be said that the improvement is owing only to the sand washed from the road over the Bog by the stream. Without entering into that enquiry, I will only state, that those natural hollows where the water is constantly soaking, continue little better than quagmire; while the banks between them that appear only wetted in flood-time, are quite firm, and afford good pasture, even although formed over a considerable depth of Bog. Here, then, we have a Bog naturally reclaiming after the formation of the catch-flooder, in the very same situation in which it had formerly accumulated.

Instances of its effects in reclaiming Bogs.

In some places of the country, the value of this improvement seems beginning to be understood.

I have met with a few, and but very few places, where the method of turning the water on the Bog has been attempted. The most perfect example is about two miles north of Killarney, where a common peasant, seeing perhaps the effect of such a washy hill stream upon the Bog below, has turned it over a few acres, by means of little channels of two or three inches deep; and has thereby not only procured abundant crops of hay, but has so far ameliorated the Bog, as to admit of bringing carriages over it, the tracks of car wheels being visible on it when I first saw it; while the neighbouring Bog, originally every way similar, continues one of the most dangerous swamps in the country.

I might here mention the valuable savannah formed in the eastern part of the District by that enlightened agriculturist, Mr. Allworth, of Newmarket, much of which is upon a Peat Bog. The value of irrigation is indeed beginning to be felt in the county of Cork, and the practice gradually extending into Kerry; chiefly, I believe, from the example of this gentleman. I need hardly mention here the numerous instances where this practice has been found useful in England; especially on the Duke of Bedford's estate at Prisleigh Bog, near Woburn. It is also common in Switzerland; doubtless in imitation of the very ancient irrigations of Lombardy.

It seems generally imagined, that the only benefit of irrigation is in refreshing the plants, and promoting vegetation, when they are suffering from the effects of long-continued droughts; and that therefore any attempt at irrigation in mountain country must necessarily be imperfect, since at that very time the water is wanted, these mountain streams are dry. However common this view of the subject may be in those southern countries, where the drought of summer constitutes the chief obstacle to the raising of live stock, the situation of things is very different in our isles. The great difficulty our grazier has to contend with is, the supply of winter, and especially of spring food, for those cattle he can graze in summer on the upland pastures. It is precisely on this account that irrigated meadows are so much valued in Wilts, Gloucester, and other parts of England, where they have been long well understood; and where they, from the scantiness of water and fall, are frequently formed at great expense. On the south borders of Scotland, a country very similar in conformation to this part of Ireland, they have also been found of the highest benefit; and in the uplands of Aberdeenshire, irrigation by catch-work has long been employed, as one of the simplest and most valuable means of improvement.

May be done by mountain streams,

In all these countries, it is well known that the time for the application of the water is chiefly during the winter, the latter part of autumn, or the early part of spring: the application during summer should be but transient, and managed with caution.

in winter.

It must have been observed, that the meadows which produce the most abundant crops of hay, are those which are naturally overflowed every winter. Instances of this I have seen

A remarkable meadow,

(5.)

EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo.

in several parts of the Highlands of Scotland; but none more remarkable than towards the east-end of the great Moor of Rannoch, which is in fact an extensive upland Bog of nearly twenty miles by twelve. The waters of this Moor, in passing eastward, are obstructed by a ridge of rock, and immediately behind it expand into a small lake called Loch Eoch. The upper rivers at the head of this lake have formed an extensive meadow, which is overflowed every winter, and the greater part of spring; no cattle therefore can get to it in the earlier part of the year, and during summer, they are removed to the higher pastures in the mountains. The meadow being thus preserved, affords an abundant crop of hay, which is regularly cut and stacked during the dry months of summer at the side of the lake, though at a considerable distance from any habitation. This meadow is now divided among several sheep farmers; and the importance of it may be guessed from the circumstance of a hill farm connected with it, which on an old lease was rented at £. 90 per annum, being now let for 900 guineas. The value of this hay meadow suggested a project for cutting a new channel through the rock, and laying dry a little more of the lake; but on account of the excessive hardness of the rock it had, after proceeding a few yards, been abandoned, when I first saw it. I think it was fortunate that the difficulty of this undertaking prevented its execution; for although it would doubtless be an easy matter greatly to extend meadows of this kind, and especially that one, the method adopted here would have probably, at this high elevation (1,000 feet above the sea,) converted the meadow in a few years into a Peat Bog.

From what has been now stated, therefore, we may learn, that the good pasture ground on the banks of rivers in these Bogs, is not so much to be ascribed to the stream having cut down the Bog to the fertile subsoil, as to the deposit or other benefit produced by the periodical inundation. We are enabled to imitate this procedure of nature in the mountain country, by the general elevation of all the affluent streams; and even the lower recipient river, by a little expense, may have its benefit greatly extended.

Moderate rains deliver
one cubic foot from
100 Irish acres;

From various experiments in the District, I find that in moderate rains, there is delivered one cubic foot per second, of water, from each hundred Irish acres. Winter floods give about three or four times this quantity; and summer drought may diminish it to one-third. The experiments were made in the District of the Laune; but I have found they agree well with the measures taken on the Eeny. It follows therefore, that we can at any time produce the effects of a winter flood, by laying on the water of three acres over one, in moderate rains, or of nine acres in drier seasons; perhaps a greater quantity may be necessary, if it be found that vegetation consumes more than one-half of the water supplied by rains; a circumstance highly probable in ground chiefly occupied by aquatic plants.

which may irrigate
18½ acres.

If it were proposed that the water should flow over the whole surface, to the depth of a quarter of an inch, and with a velocity of three inches per second, a greater velocity would gutter the mossy soil; than in moderate rains, the water of 100 acres will spread over a breadth of nearly 200 feet; and if that water be caught, and re-applied during a descent of one Irish mile, as may generally be done throughout Iveragh, the ground thereby irrigated, will be 18½ Irish acres, or nearly one-fifth of the supply. The Bog land of Iveragh amounts to about two-thirds of the whole surface; it is therefore possible to irrigate to the extent aforesaid, one-tenth of the whole of it at one time by mountain water. If to this, however, we add the quantity of upland and mountain, which may be similarly, and perhaps even more profitably watered, and the quantity which might be irrigated by the draining from the Bogs, the value of a system for bringing the streams into an economical management, will be sensibly felt; since, taking an average breadth of one mile and a half, from the summit of the mountain to the river, the quantity irrigated will be 41 acres 10 perches in every 300 acres of surface; of which 36½ acres are of Bog, and 4 acres 90 perches are of mountain.

If my ideas respecting the benefit that may be derived from any water be just, the quantity that may be improved may be conceived to lie in the form of a triangle, having its base at the river-bank, and vertex at the summit of the mountain; and as the base of this triangle will be upwards of one-fourth of that of the parallelogram, the lower part would appear to be much more rapidly reclaimed than the rest. It must be observed, however, that in all pastures irrigated by catch-work, the upper parts are better and more speedily ameliorated than those below; namely, the power of applying any part of the recipient river, which enables us, after all, to make the most effectual water-meads by the banks of the stream. The improvement, therefore, considered as progressive, may be supposed to begin from nothing, at the summit of the ground; to make rapid advances at the upper edge of the Bog waste; to be more slow in its operation below that, but most rapid of all, along the edge of the river. And if we look at the map of Iveragh, this is precisely the state of its cultivation; so that, in extending the benefit of irrigation, we are following exactly the procedure of nature, —the mode of irrigation proposed for the Bogs.

Draining is necessary,

In laying out any mode of irrigation, it must be distinctly understood that the waters are to be brought under absolute command, so that any part of the ground may be laid dry or wet, at pleasure.

not to a great depth.

Now the Bogs are at present sufficiently wet, and our operations should commence by removing this superabundance of water; in fine, any system of irrigation must be combined with an effectual drainage. In draining Peat Bog, however, it does not appear to me that any more extraordinary processes are requisite than in any other kind of ground. Wherever vegetation is expected, the water must be somewhere near the surface; and if this be requisite in

in every other soil, it certainly cannot be dispensed with in Bog, which, as is well known, when perfectly dry, is as barren as a piece of cork. Now if it be requisite to dam up the water in a Bog, after deep draining, for the uses of vegetation, perhaps the cheaper way would be, to leave it at that level at first. Besides, whatever my opinions might be as to the value of deep drains in some situations, I cannot accede to their being necessary in this District, where in a few yards, I have seen a difference of level of from 10 to 20 feet in the surface of a deep Bog. Could the water, which was abundant on the higher part, been easily transmitted through the interior part of the soils, surely such a head as this must have made it move. The upper part of the soil is the most porous and fibrous, and can offer little obstruction; and if the interior part be water-tight, we can have no advantage by deep cutting, but a fall to discharge the water from level drains. There are very few places in this district where this is necessary, the fall being almost every where obvious and great. And for this reason, after levelling over some of the Bogs, I thought it would be an unwarrantable mis-spending of time to carry on that operation to a great extent, which may account for the few sections with which this Report is accompanied. The chief application, therefore, that I have since made of the level, is to a purpose which will immediately appear, but in which it will be seen, that few sections are necessary. The water in these Bogs appears to pass chiefly over the surface, and, as usual in such cases, if we intercept and turn it away where it first appears, a great step will be made towards drying the ground below. The surface of the Bog consists, to a certain depth, of a thick intermatting of aquatic plants, through which the water can make its way but very slowly, even on rapid slopes; and below that, whether by the capillary attraction of the fibrous moss, or the actual adhesiveness of the compact Black Bog, the soil is almost impermeable to water. This circumstance is indeed so well known, that Peat Moss is frequently employed for the puddle walls of canals and other hydraulic works; a circumstance, by the way, which we may turn to account in our draining operations on the Bogs.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo.

I commence, therefore, my draining operations by ascending to the upper edge of the Great Bog Field, where the subsoil is within, at most, three feet of the surface, and which is in many cases just at the foot of the arable land. There we lay out a level line, upon both sides, into the neighbouring stream, where a small weir is to be erected of rough stone, gravel, &c.; and, in a few instances, the unfavourable nature of the site has obliged us to sacrifice a little of the ground. This catch-water to be cut one foot into the firm subsoil, in all, four feet deep on an average; five feet wide at top, and two feet at bottom.

Catch-water drains
first;

It will be proper to take off one yard in breadth of the sod on the lower side of this drain, and in throwing up the stuff on that side to form the level bank, to dig and incorporate it with the subsoil below; the remainder of the excavated stuff to be thrown in heaps, to be afterwards burnt, and applied as a top-dressing to the Bog.

Though the above Bog drain may be trusted to in most cases, yet a more perfect puddle on the lower side would not be unadvisable. For this purpose, dig out the drain four feet wide at bottom, then placing one row of sods within a foot of the lower side, fill up behind it with clay and bog-stuff, to be well wrought with the spade, and trampled down (it will generally have water enough); after this, another row of sods and backing, till two feet deep; the remainder to be done next day. With such a lining as this, the water may be made to run with any reasonable velocity, without endangering the sides of the ditch; and the whole forms a good head-fence for the ground to be improved.

I have said, the upper part of this catch-water is formed level with the surface; it will, however, be proper that the bottom be drawn with a declivity of one inch to the hundred feet from the stream, on either side, to the middle.

As there will be some danger that winter floods may injure the small weirs in the streams, it will be proper, at much higher levels, to make small channels of diversion from the stream, down the hill on either side; this will have the double advantage of producing a deposit of mountain gravel and sand on the rough pasture and bog of the hill, and weakening the effort on any given part of the catch-water. These channels may be drawn with a quick slope, so that the water may run briskly along in them; and even should the hill-side be cut thereby, there will be no material injury, as it may be again diverted.

If this first catch-water is to be employed at any time as a flooder, the upper edge of its bank must be carefully trimmed to the level; but I believe, on the whole, it will be more advisable to make a separate flooder immediately below, which may be cut at the exact level by means of the plumb rule, to the depth of one, and width of two feet, with an outlet from the catch-water at every five or ten Irish chains.

may be employed as a
flooder.

More advisable to have
a separate flooder.

Parallel to this first flooder, there should be another at two or three chains distant; but this, although its bank, at every ten Irish chains long, is to be formed on the level of the turf, yet its bottom must be one foot deeper down the stream than above, that it may act on occasion as a tail-drain. In like manner, the next flooder below on the same line should have its bottom a prolongation of the slope of the bottom of the other; but its level bank will be a foot lower, and so on lowering successively one foot every ten chains. The intention of this is, not only that each flooder may act occasionally as a tail-drain, and run freely at such times without soaking through its bank, but that the whole water of one catch may be occasionally turned on the lowermost piece, with the least possible loss of fall.

Other flooders,

My reason for sloping each of these down the stream, rather than upwards, or from the middle of the catch to a cross drain at each end, is, that up the valley the supply of water is

act also as tail-drains.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Cross-drains.

is most abundant, the mountain becoming ultimately a great basin; and by turning the water down, we are the longer getting to the recipient, and of course our supply of water is the more useful.

Across these flooders, and directly down the slope, a drain must be formed at every ten chains distant; the depth of this need not exceed one foot, for indeed it will probably cut deeper in time; but it will be proper, for various reasons, to lay a sill in it where it crosses the catch; for which purpose, the common slate and flag of the country will answer extremely well; one being buried on edge, with the upper side a little above the bottom of the catch, and another laid flat below, that the bottom may not be too much injured by the over-fall.

As the catches drain only one way, a sod or a slate, which may be used for a stop, will determine whether the water shall stop and flow over the upper catch, shall run along the catches, or shall turn down the cross drain.

Having thus disposed of the whole slope into a series of catches and cross drains, I believe it will be readily admitted, that the surface of the Bog may now be laid under water at pleasure, and may be likewise laid perfectly dry. It is evident that surface water, wherever it appears, will be quickly disposed of by means of the catch-water delivering it into the cross drain; were there ever so great a spring, therefore, to appear in the Bog, its injurious effects must be confined to a part only of one of these patches or fields, which at most contain but two or three acres. But it is obvious, that if a spring of this kind be any way troublesome, the farmer will adopt the expedient of cutting a short cross drain to deliver into the nearest catch, which cannot be above thirty or forty yards off. If he finds that there is a stratum rising to the surface which delivers water along a considerable level, his remedy will be a level drain, which should be made hollow, so as not to cut up his ground, and a cross drain as before. But the chance of springs, &c. will be greatly diminished, if not entirely done away, by the adoption of the above expedient. For, independent of the speedy removal of surface water, which by sinking and reappearing, is the most frequent cause of springs, and of which there are many curious instances in the Bogs, the catch-water drain at top, which descends into the firm subsoil, or at least into the silty earth, as it is termed by the workmen, will effectually remove any underground supply, and of itself will be a great step towards the drainage. For which reason, and because the peculiar situation of these Bogs, and the position of the strata below, makes a succession of benches, it were on the back of which we have deep Bog gradually rising up the slope above; but which upon the edge, and a little below, is comparatively thin: as there can be little doubt but each of these successive benches of Bog owes its origin to the supply of upper water, it may be expedient, besides the main catch-water aforesaid, to make several more between that and the river. I certainly do expect, that the first one will in a great measure, if carefully performed, remedy the chief part of the evil; but as its execution must frequently be entrusted to persons of inferior skill, and is therefore likely to be imperfect, I should have the less difficulty in proposing a succession of them.

Springs, where found,
easily obviated.

Lower catch-water
drains.

Objection answered.

And here I cannot help taking notice of an opinion, which seems very common in this country, where, in fact, draining is very little understood.

Discovery of the fall is
but a small step towards
draining.

We are told, there can be no difficulty in draining these Bogs, as the fall is generally so obvious, and we have only to draw the water down the hill; now if this be the case, how comes it that these Bogs have been so long left in their present condition; or rather, how were they ever to become Bogs at all? The truth is, we have not advanced one whit in the business of draining, by knowing where the fall is; it is almost every where sufficiently obvious. I have not yet seen in Ireland a Bog where the fall was not as evident upon examination, as if it had been on the side of a hill; for I have seen, as yet, none upon which there was not some water flowing; so that the direction at least, if not the amount of the fall, was readily discovered. Ditches drawn down the hill are common enough in Ireland, where indeed there is perhaps every where a great deal of useless spade labour; but, as might be expected in a retentive soil, they drain nothing. They have not the least tendency to draw the water from the side, since they cannot possibly give more fall, either on the surface or below it, than what exists already in the ground. Side catch-waters are therefore absolutely necessary to prevent the infinite multiplication of these drains, by collecting the water of a considerable surface: in the position of these lies the great skill of the drainer. We frequently see numerous ditches drawn to join the main drain at every oblique angle, and running rapidly down the slope, as if the only difficulty were to deliver the water as quickly as possible into the main trunk. By these means, the field is entirely cut up; or if the drains are, with a view to agriculture, made hollow, the rapid slope enables the water to gutter their sides, and the stuff carried into them by that or other means choak and blow them up, so that they are in a short time rendered useless. The cross drains, or catches, must be therefore made as near the level as possible; the bottom may have a small inclination to favour the transmission of the water. A slope of one in eight hundred allows water to pass nearly at the rate of two feet per second, which is a greater velocity than is common in most rivers, and fully as great as the stuff in which drains are usually constructed is able to bear.

Position of the catch-
waters,

The situation of the cross-drain must next be attended to, that its effect may be the greatest possible; and in fixing this, we are assisted by the remark I have already made on the transverse section of the hill.

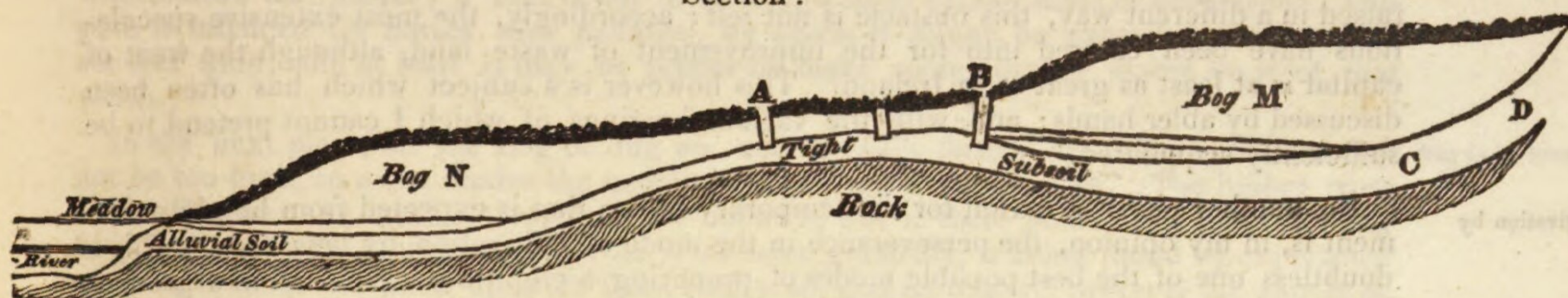
Thus

Thus, in the figure annexed, the cross-drain at A, although it may be very effectual in intercepting the water which would otherwise flow over the bank into the lower bog N, is not otherwise useful to the upper bog at M, since the intervening shallow, being left at its original level, there is the same cause as ever for the accumulation of the bog M. A drain cut at the shallowest place would be the cheapest catch-water; but one formed at B, (where the bog is, say four feet deep), and carried into the firm soil below, will not only be a catch-water for N, but will also be a very useful tail-drain for M. It must, however, be observed, that B, when formed, must have a low outlet cut through the bank towards A, at the level of its bottom. I conceive the flat or shallow basin between B and C to have formed a favourable receptacle for aquatic plants; and these, by decaying in that situation, have preserved a constant shallow basin for the land-water on the side next D; and that in this way the bog has gradually crept up the slope of the hill. If the piece of bog between B and A be extensive and pretty deep, say three feet deep, then we must suppose it a continuation of the lower bog at N, which in this way has extended over many original inequalities.

may also be useful as tail-drains.
Supposed origin of such Bogs.

Upon boring at side of several streams, where deep bog approaches the water edge, I find the subsoil immediately at the bank, to be for the most part as high, if not a little higher than what is immediately behind. This was indeed to be expected, as all streams which do not cut in their bed, and indeed, most of those which do, have their banks gradually rising by the depositions in flood times; and this deposition, which takes place only when the waters begin to overflow, must be evidently greatest, just at the bank where it first and most frequently occurs; it is also an additional proof, that the goodness of our pasture meadow, near the streams, is the effect of deposition, and not the wear or removal of the bog stuff. This property of rivers is so well known, that I think we need look little farther for the original causes which have produced these accumulations of turf in the vallies of this district.

Section :



It may be said, that the method I have now proposed for the reclamation of bog, will produce a very poor water meadow, since the catch-work drains being at such distance, will hardly have the effect of spreading the water over the surface; but it must be observed, that much of this is necessarily left to the waterman: small gutters must be cut, wherever the water appears likely to run into channels, with a view to cast it over the surface. To make a perfect water meadow of every part would require an expense, which, however likely to give an ample return, I do not expect to see laid out on those bogs, in the first instance; but the improvement here proposed, while it will unquestionably ameliorate and extend the pasture, and will thereby allow of much of the upland to be converted to tillage, may be executed at an expense not exceeding one guinea per Irish acre. It is therefore, in my opinion, well worthy of attention.

Although perfect meadows are not formed, the improvement is considerable.

But it will, in the next place be asked, are no methods proposed for the conversion of this waste ground into arable land? That peat bog is capable of such an improvement, if I had not already been satisfied of, by what has been done in this way in the lowlands, highlands, and isles of Scotland, I might have discovered by the slightest inspection of the district I now report on: there is not an atom of limestone yet found in the whole barony of Iveragh; neither do I think, from the geological aspect of the country, that any limestone or even marl, is ever to be expected; yet there is a great deal of the bog, in all parts of it, which has been so far improved, as to bear not only considerable returns of potatoes and other green crops, but even of wheat and oats. To green crops, as is well known, bog is particularly adapted. One of the most abundant returns which I have seen any where, was on a small croft on the road between Eeny and Currane, where, after raising a heavy crop of cabbages in the earlier part of the season, the possessor had laid it down with grass seeds, sprinkling on a little shell sand; and when I saw it, the quantity of hay was at least worth, in that district, £. 6 per English acre, besides the after-grass.

The Bog is often reclaimed by tillage.

Flax is also raised with success in these crofts, but the quantity laid down under such crops usually so small, that no accurate statement of the return can be given.

The great, I had almost said the only object of cultivation, is the potatoe crop; and the process employed is almost every the same. The bog is laid off into a field of about two acres, and surrounded into beds about four or five feet wide, and intervening trenches cut: the turf is applied to increase the height of the bed; potatoes are then planted with shell sand, and all the manure the possessor has; the process otherwise is similar to the usual system in Ireland; the second earthing year of cultivation, the potatoe crop is usually better than the first; after which it is common to take crops of oats or wheat without manure: three or four of these crops, having been attempted, the last perhaps so little worth, or so liable to be blighted, that the improved bog is left to acquire a covering of such grasses as nature may provide.

Potatoes chiefly raised;

then oats.

Left for grass.

Often neglected.

provide. In this stage the drains or trenches are allowed to choak; and in two or three seasons more, the improvement is almost entirely effaced; the croft is sometimes a little greener, but in many cases is scarcely distinguishable from the neighbouring bog.

Causes of the neglect.

Operation of tythes;

One of the causes of this frequent neglect of the bog, after it is reclaimed, is, I believe, the peculiar operation of what is called the Barren Land Act; which, by exempting all reclaimed bogs for seven years from payment of tythe, acts doubtless as a bounty for their first cultivation. But in the usual rotations of cropping above-mentioned, which by the way is almost the constant routine throughout Kerry, by the time that the land is to be broken up from pasture to lay it down again in potatoes, with manure, the exemption from tythe has ceased, and the deduction from the crop in that way, which may be stated at one or two pounds per acre, is a discouragement to the continuation of the improvement. The great object with the small tenant is an immediate return; this he obtains by the potatoe crop. He cannot afford to lay out the labour of one year, even although it should be amply repaid during the next; he is therefore led rather to take the potatoe crop off a piece of new bog, when in his power, than one previously in cultivation, since there is the same expense of labour and manure, while a few years more places the former cultivated spot in the same predicament as before. This obstacle to the continued improvement of bog would be at once removed, were the allotment of part of the waste land to be substituted as an equivalent for ever for the tythes of the remainder. There could be no doubt but that this portion of the church-land would be as well rented as any other; and the exertions of the cultivator, unfettered by a tax upon his profits, would then be more likely to produce a rapid amelioration of the whole.

I should conceive many other benefits likely to arise from such an allotment. It is well known that the tythe is the great bar in England to the extension and improvement of arable land; since it must be a very advantageous speculation that will at once bear a deduction of ten per cent. from the returns. But in Scotland, where the revenue of the church is raised in a different way, this obstacle is not felt; accordingly, the most extensive speculations have been entered into for the improvement of waste land, although the want of capital is at least as great as in Ireland. This however is a subject which has often been discussed by abler hands; and with the various bearings of which I cannot pretend to be sufficiently acquainted.

and cultivation by
beds.

But another physical reason for the temporary return that is expected from bog improvement is, in my opinion, the perseverance in the mode of cultivation by lazy beds. This is doubtless one of the best possible modes of procuring a crop from a piece of new ground; because the numerous trenches act effectually as drains, while the open heathy bottom on the bed delivers off the original superfluous surface water. But by digging frequently, and throwing on loose stuff, the top of the bog is rendered so open, and so much exposed to the sun and air, as at length to enable to retain water for a moment; while the deep trenches, so near each other, keep the interior moisture at too low a level for vegetation. It is a common complaint here, that crops on the bog are liable in some years to a total failure; and therefore no improvement can be ventured but by a tenant who is ensured against want, by having possession at the same time of a piece of dry arable upland. It is not unusual, in the improved bogs of Ayrshire, for the crops to fail on the top of high raised ridges. This is particularly the case with the corn, and even sometimes with the grasses. Those plants, such as beans, turnips, cabbages, &c. which strike their roots deeper, or overshadow the ground, are not so liable to injury. The remedy is evidently to lower down the beds into pretty level and broad ridges; not to crop too long before laying down in pasture; to cover the bog with earth, gravel, or other heavy soil, irrigation and rolling.

Conversion of the Bog into Tillage:

In improving the Bog,
capitalists only could
employ.

Canals,

and Railways.

In giving my opinion respecting the most advisable mode of converting these Bogs into arable land, I beg leave to premise, that the methods will be essentially different, according as the improvement is to be effected by the present occupiers, or by individuals, or companies possessed of extensive capital. In the latter case, means may be used for the economy of labour, the acquisition of manures, and the like, which in the former are altogether out of the question. Canals, for example, are of this description. The construction of a navigable canal, especially if provided with locks, involves with it such a host of extra expenses, very little connected with drainage, that I have no hesitation in considering it an useless and premature expenditure of capital in such a country. Nevertheless, I have ventured, in compliance with the fifth article of instructions, to suggest the propriety of converting one irrigating drain into a navigable communication. I have also ventured, even with this in view, to deviate from the dimensions prescribed in the sixth article: my reasons for so doing are, that the general relief of the ground absolutely prevents the possibility of a communication between any canal that may be formed there and navigations in other districts; and upon such a short piece of navigation as we can never look to any employment for large vessels, I have thought it better to suit the dimensions to the small boats of the country. The formation of railways, although better adapted to the configuration of this district, is liable to the same objections as canals. The slightest railway that could be of any service, would cost at least £. 500 per mile; and in such a country, where even wheel carriages of the rudest kind have hardly penetrated, it is not to be expected that the people could be easily familiarized with the benefits and management of a railroad. With navigations the case is somewhat different; the people are in general good boatmen, and so well acquainted with

with water-carriage, that even the short navigable reach of the Eeny mouth is taken advantage of by those who have occasion to carry shell-sand to farms above; and upon the river Valentia the transport of the shell-sand of Bognish has the appearance of a lively trade. I may observe by the way, that in making railroads, iron is much to be preferred to wood: it is, on the whole, nearly as cheap, more durable, and, as now made, by locking together, is much less exposed to depredation.

That the Bog may be reclaimed by the present occupier, the first step to be taken is its drainage. I have already declared my opinion respecting deep drains.

The catch-water drain is to be first formed on the edge of what in Scotland is called the bent moss, or on the boundary between the Bog and "montaan;" the most advisable situation is that which I have marked. This will answer at the same time as a head fence.

The Bog is next to be marked off into ridges, at distances of one perch asunder, and a small furrow taken out with the spade, one foot wide and ten inches deep. The spade used for this should be a foot wide with a small feather; which will save time in casting. If the Bog be pretty flat, the whole declivity will be wanted in the furrow, which must therefore be drawn in the direction of the fall, and a small water furrow of moderate depth drawn here and there obliquely across the ridge; if otherwise, the original furrows may be made obliquely down the declivity, and will of themselves act as water furrows. The Bog must now be left some time, to get relieved of the surface water. In the next place, let a small path be formed by carrying gravel and earth out on the middle of every third ridge, so that two ridges may be left in the original state between every two other ridges which have a path in them. The width of the path may be three feet at first, and at least six inches deep of stuff; it being previously observed, that the turf from the furrow on each side is cast into the middle of that ridge. The most convenient way of forming this road will be by the wheelbarrow and planks; if that is not to be had, a hand barrow must be employed. This path is intended for horses with panniers, by which it might be extended afterwards to six feet wide; and at least it may be proper to make some turning places on it of that width.

In the next place, let the Bog be dug up, and carefully formed into ridges, which must not be too high, so as to render the middle liable to injury by drought. The higher parts of the Bog must be levelled down into the hollows; but if there be any turf holes or other deep gashes, it will be proper to slope the sides down gradually, it being found by experience when such holes are filled up with loose Bog stuff, that its porosity prevents the supply of water necessary for vegetation. The surface of the ridge must be carefully pulverized with the spade, hoe or otherwise; and as it gets dry, the ridges which have the path in the middle may be harrowed by horses, by the help of a splinter bar somewhat longer than common; a top dressing of shell sand being now applied, which may be carried on the Bog by means of horses and panniers. It would be advisable to leave the Bog for one year, to consolidate in the interior, and pulverize on the surface; that part which is intended for pasture being sown with grass seeds.

But the tenant will naturally look for some crop, the very first year after performing this labour. In that case the dressing of shell sand or other calcareous matter being applied, the ground may be sown with oats, and a tolerable crop may be relied on: but potatoes are more likely, in this country, to repay the cultivation; a crop therefore of these may be taken in the usual way, that is, by forming beds across the intended ridges (the permanent formation of which may be deferred until the next season,) and with stuff taken from the trenches, earthing over the plants. Manure however, in this case, is absolutely necessary, and if not to be got in sufficient quantity, earth should be carried out on the Bog wherever it can be had. The manure may be greatly increased in quantity by intermixture a few weeks before hand with the turf or other vegetable matter. Next year the lazy beds may be formed into ridges by filling up the intermediate trenches, a top dressing of sand applied, the Bog sown with oats or wheat, and harrowed in by horses when practicable, or by men.

The third year of cropping may be oats or barley, with perennial grass seeds, which being cut for hay next year, will leave the ground in a tolerable meadow.

Another Rotation proposed:

1st year, potatoes with dung in lazy beds, applying gravel and clay. 2nd. Oats in ridges; more gravel and clay; the turf next burned along with clay. 3d. Cabbages and flax. 4th. Potatoes with dung. 5th. Ploughed for oats or wheat. 6th. Barley with grass seeds. 7th. Hay. 8th, 9th. Meadow.

Turnip husbandry is unknown in this quarter, I have not therefore expected that it will be introduced by the tenantry; rape is little known; there are no oil mills; and it could only be eaten off by sheep; and thus, producing no immediate return, I have not included it in the system.

In the following estimate I have been partly regulated by a reduction of the prices for which the same things are done in Scotland on similar soils; and aware of the great changes to which the wages of labour are subject, I have stated them by day's work, as nearly as could be ascertained, from a comparison with the system employed in the country.

(5.)

EXTRACTS

from the Appendixes to
preceding Reports.

But much of the Bog is
reclaimed by the pre-
sent tenants.

First by catch-water
drains.

Paths on some ridges.

Bog to be levelled.

Top dressing of sand,

grass seeds,

or oats.

Potatoes more likely to
repay cultivation.

Course of crops.

Another course.

232 APPENDIX TO SECOND REPORT FROM SELECT COMMITTEE

The labour must necessarily be done at first with the spade, but the supply of water being cut off the Bog by evaporation, and the consumption of vegetables, sinks and consolidates so far as to bear ploughs, horses and carts, after a few years cultivation. In great droughts water may be brought down the middle of each ridge from the catch-water at the head.

Estimate for First or Potatoe Crop.

Formation of a head catch-drain of two perches; it may be done by one man in eight days with ease; the wages are 10d. per day -
Cutting out furrows, and levelling ridges, 160 running perch -
A footway on every third ridge, 1 yard wide, in all 60 running perches, including crossings, to be done with horse and pan-
nier, or wheelbarrows in preference -
A top-dressing of 60 loads of shell-sand, &c. -
Formation of lazy beds, dunging and planting potatoes -
Second earthing, taking up and carrying off, in all -
The dung is worth 1l. 10s. -

Labour in Days.		Expenses.		
Men.	Horses.	£.	s.	d.
8	-	-	-	-
10	-	-	7	6
-	-	-	8	4
20	-	-	-	-
20	20	-	-	-
40	20	1	13	4
50	-	1	13	4
-	8	1	13	4
-	-	2	8	4
-	-	1	10	-
148	48	-	-	-
-	-	9	14	2
-	-	-	-	-
-	-	10	8	-

The return 120 pecks, deducting 16 pecks of seed, is 104 pecks of 10 stone each, or 52 statute barrels at 2/ per peck -

Therefore from this result of - - £. 10 8
deducting the value of the manure - - 1 10

196 days labour give a return of - - £. 8 18; and consequently give the wages of 10½d. per day to the labourer.
The present wages are 10d. per day; and the price of potatoes, which we take at 2/ per peck, is more commonly 2/6.

Estimate for the Second or Oat Crop.

Reducing the lazy beds to regular ridges - - -
Giving a top-dressing of sand and earth - - -
Harrowing - - -
Reaping 6, making ricks 2 - - -
Carrying off and stacking - - -
Threshing 5, dressing 1 - - -
Carrying to market - - -

Labour in Days.		Expenses.		
Men.	Horses.	£.	s.	d.
24	-	1	-	-
21	21	1	15	-
6	-	-	5	-
8	-	-	6	8
1	1	-	1	8
6	-	-	5	-
2	4	-	5	-
68	26	-	-	-
-	-	3	18	4

Total time employed - - -
Say 94 days in all, at 10d. would be only - - -
The produce, deducting seed, is 12 barrels, statute measure, at 14/ present price 17/ - - - £. 8 8 -
Straw worth - - - 1 - - -

Total - - £. 9 8; which is 2/ per man or horse per day.

It may be thought improper to state the hire per day of a horse the same as that of a man; but in this pasture country, horses are numerous, and their labour little valued.

It appears, therefore, from the above Estimate, that the cultivation of Bog may be undertaken by the occupying tenant in the country. During the operations for his potatoe crop, we may state his wages as from 8½d. to 1s. per day, according to the goodness of his crop, and the price, valuing the potatoes at 4s. per statute barrel. The general wages of labour in the country are at present 10d. per day. But his labour on the second or oat crop will produce him at the rate of 2s. per day, while we value the labour of the horse per day, in each case, at the same rate as that of the man. Now it may also be observed, that the time occupied by the labour of the man is, at potatoe crop, 148 days, and 48 days of a horse; at the oat crop 68 days, and 26 days of a horse; so that it is perfectly competent for one man and horse to labour two acres at least in this stage of the business; viz. one acre of ground, to be brought in from Bog by potatoes, and another under a second year's crop of oats. The horse being comparatively so little employed, we may take his labour as being applicable at least to the cultivation of five acres;

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.
Rep. IV.
Mr. Nimmo.
Estimate of first

and second crop.

They will repay the labour,

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo.
and afford rent and
tythe.

$\frac{1}{2}$ acre oats, 6 barrels, at 14s.	and straw, 10s.	- -	4 14
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per acre for tythe and rent, after two years cultivation only.

Subsequent returns
greater, though not
easily valued.

Another mode of cultivation.

Another mode of cultivation.

Deep Bog not likely to
be ventured on.

but by Capitalists;

who should irrigate.

The Bog is so laid out, that the greater catch-waters or drains occur at not less than ten chains down the hill from each other; so that we may suppose it divided into squares of ten Irish acres each.

£. s. d.

— 3 104

— — 96

- 1 -

— 2 —

15

This supposes the flooding done by bends in the flooders, or small dikes of the Bog, left with a triangular sod cut out in the middle of each.

Expense when farther improved.

But that the works may be more complete, led us add a flag or brick culvert over the tail of each carrier as a road, a stone frame at the cross-drain, and a slate for shutting the drain, and diverting the waters.

	£.	s.	d.
The culvert of hollow drain, 4 yards at 2d. made in Britain for 1d. - - - - -	-	-	8
The frame at the cross drain of flag, or 5 bricks - - - - -	-	-	4
Slate for shutting ditto - - - - -	-	-	3
		16	3
Add for unforeseen expenses, at 20 per cent. - - - - -	-	3	3
And for superintendence in execution, 10 per cent - - - - -	-	1	11
Total expense per acre - - - - -	£.1	1	5

Effects of the first.

The water should be allowed to flow along the carriers every flood, for some time before the cross drains, culverts, and puddles are made. This will produce a material improvement of the soil, and render at least the turf immediately for the carriers more fit for the purposes of the works.

If thought proper, the cross drains may be doubled; viz. one at every five chains. The excavation of these may be saved in making the carriers smaller and shallower; but the number of culverts and puddles may be doubled, which will add 1s. 3d. per acre to the expense.

The deposition useful.

But in my opinion the improvement of the soil is independent of the formation of the cross drains and culverts, which are, in fact, only necessary for the perfect formation of the water meadow for crops of hay. It is unquestionable, that there will be a considerable deposition of the soil on the Bog, by means of the flooders. This deposition, indeed, will in time fill up the flooder, and may be therefore thought to injure the works. But this is evidently a desirable event; for instead of clearing the flooder, there should be a new one opened immediately above the former, and so on continually. The ultimate effect of this will be, that we convert, or rather cover the whole surface of the Bog with a layer of the finest soil, at the expense only of digging it ten inches deep. This result is infallible, although it is perhaps a work of time. Let us enquire into the probable period. It has been calculated, that rivers carry into the sea the one-four hundredth part of their volume of earthy matter. Mountain streams and floods certainly take a great deal more. But at this estimate, the water which flows three inches per second, and a quarter of an inch deep, over a line of 192 feet, will in 400 seconds deposit a quarter of an inch of soil on 192 feet in length, and three inches wide. In 1,600 seconds, the width will be one foot, which produces a covering of soil one inch deep over an Irish acre, in 27½ days, or say, in one month.

This quantity I have already shown to be produced from 100 Irish acres, so that if we catch the waters of 100 acres of the uplands and throw it on twelve acres of Bogs, we have a deposition of one inch deep on the surface per annum. I know of no method of transport by which this result could be produced, at less expense than £.60 per annum. But this is only one instance of the many advantages procured by a skilful irrigation, an operation too little attended to, although it is often observed, that no mode of improvement can be more profitable or less expensive.

Herbage also improved.

The benefits of this system are not confined to the amelioration of the soil; the water will speedily destroy the heath, and substitute for it the more useful grasses, and although the weightier cattle may not be entrusted on the watered ground for the first year, the crop admits of being easily preserved for hay. Having this return in view, a greater expense may be laid out, on a part at least of the land to be watered, so as to make a perfect meadow. Pare off the upper sod of turf, and smooth and level the subsoil; lay down the upper turf again, and allow it to dry, before the application of the water in the months of March or April. The return of hay, which may be relied on the latter part of summer, will be three tons at least per Irish acre, which in this country, at £.2 per ton, will be amply sufficient to repay the whole of the expense; besides leaving the ground in a permanent and progressive state of improvement, which may be said to cost nothing whatever.

Hay,
worth £.6 per acre.

The principle employed
in many instances,

Being anxious that the effect of these operations should be perfectly understood, I beg leave to remind the Board, that lakes and marshes are frequently laid dry, by turning in the troubled water of a river, until the deposition raises the bottom above the usual surface-water; after which the river is either turned off, or a bed left for it in the alluvion. This has been practised to a great extent in Languedoc, Lombardy, and other places, and in our own country the same principle has been applied to raise the low flats on the Severn, Dee, Humber, Forth, &c. with the greatest success. If, in such cases as these, where there is naturally a water-carriage to every spot of the land, this method be found more advisable than any other, surely there can be no hesitation in recommending it for the improvement of Bog, where the softness of the soil is a continual obstruction to the formation of roads, railways, canals, or modes of transport of every description.

In a lake or deep morass, the quantity to be filled in at one place is considerable, and might be well worth the expense of a railway at least, which can be transported to a new situation with comparative ease. The depositions from a river are gradual, and although general, it will be long ere they have any perceptible effect. In the Bogs, on the other hand,

hand, the very first deposition will produce a visible benefit, and every succeeding one extends it.

In a lake the affluent river will deposit its sediment, because the waters are deprived of that velocity which enable them to move those materials before. In fact, every river begins to deposit when its rapidity is diminished, and begins to cut up the bed whenever its velocity is increased.

We imitate this process on the Bogs, by laying out dykes and drains on the horizontal line, and thereby when the waters are turned in, form long and narrow lakes on the sloping, and broader on the flat Bogs. It would be useless to make these dykes and drains large; it will be far better to make a succession of them; for we will thereby be enabled to produce a considerable deposit on one tract, while others above and below afford us an useful pasture. There are, however, cases where a short dike at a gullet, converting an extensive piece of Bog at once into a lake, may, by the help of a river near it, produce a considerable improvement.

Observe, that this system does the least possible damage to private property. We want nothing but the sediment. When a river therefore rises in flood, its superabundant waters being caught high, and spread out over these extensive lakes, may return purified, as the flood abates, even by the same channel as that they entered; so that the meadows below are preserved from floods and depositions, which they now have no need of, and the mills are supplied with water which would otherwise be wasted.

But after we have transported the water at high levels to a great distance from the channel, it will be greatly more advisable to deliver it with this advantage of fall to irrigate the grounds, and supply the machinery below. The carriers therefore, which are formed in this manner, will be works of the greatest utility, even after they have ceased to be necessary for the improvement of the Bog.

and may be otherwise of benefit.

Besides the improvement now proposed by irrigation, and "warping," the great capitalist will naturally look to an extended agriculture. It is not, I presume, expected that the engineer can communicate much agricultural information to persons likely to embark in an adventure of that kind. And indeed I have little to add to what I have already proposed for the smaller tenant*. What I have recommended for him to be done by horses and panniers, according to the present system of the country, will naturally be done by the other, by means of wheel carriages; I should therefore recommend a path down the middle of every second ridge; and in a few seasons, especially if the ground has been previously warped by irrigation, the lands may be ploughed by horses, and the crop removed by carts. This will lessen the expense of cultivation nearly one-half, and give a consequent increase of profit. That this advantage may be more early procured, I have thought of an addition to the present car, which will enable it to be taken over soft Bog or deep roads, and will render it also of great service in the general system as a roller. I have described this new implement in an Appendix.

Capitalist will look to an extended agriculture.

Railways have been employed for the purpose of spreading gravel and earth over a bog; and first, I believe, in Lancashire, by Messrs. Roscoe and Wilkinson. If it be thought advisable to adopt such a system of transport, I should recommend that they be made of iron, and that the wheels should run on the top of the ledge. I have contrived that the car above-mentioned may be used on such railways, and at the same time fitted for travelling on common roads.

Railways.

Roads must be made in any country which is advancing in agricultural improvement; and it is fortunate that we are enabled in the bogs to adopt the best possible lines, without being obstructed by inclosed property, or great inequalities. Having once these, the formation of canals and railways may be an after-thought; for they are rather fitted for a state of cultivation in which capital and produce are abundant.

Roads more immediately necessary.

That the introduction of wheel-carriages is a much greater step in cultivation than any subsequent improvement of them, will particularly appear from the following estimate of the loss sustained in this district on that account alone.

Value of Wheel-carriages exemplified.

The quantity of butter sold in Cork last year, was 250,000 firkins; of which, I suppose, one-tenth came from Iveragh, or at least from that barony and Dunkerrin, viz. 25,000 firkins.

This must have been carried in horse loads of two and three firkins; say two and a half on an average, with each horse and driver, makes 10,000 journies of horse and driver per annum.

Now suppose good roads to be made, and carts substituted; these carts might carry 20 cwt.; but we shall suppose them loaded only with 18 firkins, which at present require $7\frac{1}{2}$ horses and drivers, say only 7; then each cart saves the labour of 6 horses and drivers the distance of a journey to Cork, which is at least 75 miles.

The bog country of Iveragh is seldom more than 6 miles distant from good manuring sand; much of it within one mile; and it is never far from earth or gravel. Each of these

* Hemp appears to me an object particularly worthy of attention. It is well known to be an excellent preparative for wheat. The plant is likely to give rise to a variety of manufactures, which, by employing the population, will consume the produce of the country. The ready communi-

cation with the great dock-yards will take off all the manufactured produce, and the neighbourhood of the sea will furnish a supply of alkali for the conversion of the hemp-seed oil into soap, of which we have so long drawn such immense supplies from Russia, at an enormous expense.

Advantages of hemp.

horses

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo.

horses and drivers could make from twelve to fifty journies, with sand or earth, during the time employed in making one journey to Cork. The six could therefore lay from 72 to 300 loads on in that time, which would be sufficient for at least one acre; and its produce after that cannot be reckoned at less than £.3 per annum. Take this only at ten years purchase or £.30.

Now the 10,000 journies of horse and driver are equivalent only to 1,430 journies of horse and cart, leaving 8,570 journies of horse and driver for the improvement of the country; and 1,430 acres thus improved every year, produce, at £.30 each, a permanent benefit of £.42,900. which may be repeated every year so long as there is land to improve. This immense sum, which may be said to be lost or wasted by the present improper direction of labour, may surprize those who have not turned their attention to such calculations. Yet I insist, that if examined with care, it will be found greatly under-rated; for the improvement must be supposed to be done with carts, which would increase the amount six or sevenfold, without a single additional horse or labourer being employed.

Other future improvements, how beneficial.

No future improvement on the means of transport could give many more hands to agriculture; but it would have another important effect, viz. the diminution of the expense of bringing to market; and therefore an encouragement to the raising of produce of greater bulk and smaller value, such as corn. This could bear the present expense of transport from that country, in no shape but that of spirits, which is there an article of import, and in fact constitutes a great proportion of the back carriage from Cork. But this barony, whenever its culture is increased, has the sea just at hand to bring its produce to the best market, without the necessity of looking to any intermediate emporium; and in that event the return of lyme, gypsum, or other manure, of which it is now destitute, will re-act powerfully on its present extensive wastes.

Planting well suited to his district,

Planting is a means of improvement particularly adapted to this district; fir is found in all the bogs in considerable abundance, and frequently with 5, 6, or more feet of turf below it; and oak is found at the bottom of most of the bogs. The whole of the Dunkerrin mountains are a stool of oak. This shows, at least, that the climate and soil are well enough adapted to timber; yet there is in the whole barony hardly a tree to be seen, excepting a few near Cahirbarna, and a pretty extensive copse in Glen Carra. The original woods were destroyed by the iron forges, near a century ago; and no inclosures being made the stool of oak has been kept down by the continued depredations of cattle.

That it has not been extirpated may be inferred from this; that Mr. Jermyn, a farmer on Kenmare Bay, having inclosed a piece of rough ground by the sea-side, and planted forest trees, finds them nearly choaked by the rapid growth of the natural oak coppice wood. I may also observe, although not strictly in place, that Mr. Bland of Derriquin, and Mr. Irvine, who has planted for the Marquis of Lansdown, find no difficulty in raising fir and birch on any bog, whenever relieved from the surface water.

I should recommend, however, that the mountain ground and upland bogs, especially on the Cummara, Eeny and Carry, should be chiefly planted. The lower bogs seem fitted to give greater returns by other means. These are all rivers well adapted for floating and saw-mills; and the facility of carriage to the great dock yards, will render the disposal of the timber at all times certain.

I have the honour to be,
Gentlemen,
Your very obedient Servant,
Alexander Nimmo.

Dublin, Dec. 27th, 1811.

The Killorglin Bog:

BEFORE leaving this Bog, it may be observed, that even the more unpromising parts of it are not out of the reach of a profitable cultivation. A Mr. Murphy has taken a lease of 1,400 acres of this Bog and the adjacent mountain, from Judge Day, and has already built a good many cottages on it. He limes at the rate of 100 barrels, which cost 33s. 4d. but with carriage, breaking and burning, come to about 7l. 10s. per acre; then having drained and dug the field, which is not done under 50s. probably more, he takes one crop of potatoes, about three Kerry barrels of 21 pecks; the best giving in the country, 5s. 5d. let us call his 4s. 63 pecks, at 4s. per peck - - - - - £. 12. 12. —

Next crop better, say - - - - - 16. — —

Next crop worse, say - - - - - 12. — —

A crop of oats, worth - - - - - 10. — —

when he leaves it for meadow, and it pays in that state, a rent of £. 4. 11s. or four guineas per acre. He finds the Potatoes from Bog or earth much the same, his ground being mixed with moor, the first are not so dry, but larger and more productive.

Of the Drains for Bogs:

By the foregoing Estimate, it appears that the drainage of 65,284 Irish acres = 105,749 English acres of Bogs in this County, may be effected for the sum of £.70,041. 8s. 11d. which is at the rate of £.1. 1s. 6d. Irish, per Irish acre; or 12s. 3d. sterling, per English acre.

Though

Though this may appear a small sum for effecting so great an object, I am perfectly satisfied that it is adequate to the purpose. I have, even in the prices for the different Drains, made some allowance for their being cleared or scoured subsequent to their first execution: I conceive this an important part of the operation; but it may be done at so small an expense, that it would be very injudicious to go to the charge of deep-sinking, by way of avoiding it. In none of these Drains do I suppose it necessary to go to a greater depth than six feet, unless in one or two instances to bleed a lake. By this, I mean their permanent or ultimate depth, which it would be very improper, however, to excavate in the first instance, especially in Red Bog, for the semi-fluid mass would undo the work nearly as fast as it was executed.

The proper way is to open a cut of one or two feet deep at first, and when that shall have to a certain extent, consolidated the surface, to deepen and widen it by degrees; we may go on that way until we arrive at the bottom of the deepest Bog in Ireland; but this, even if practicable, would very seldom be advisable. We might succeed in making a very good turf bank, but would run a great risk of unfitting the Bog for agriculture, especially if every supply of water was to be so cut off.

I have proposed these Drains only for places where there were no natural hollows or water-courses formed already, and where the flat Bog rendered it advisable to run a great many Fence Drains into one common sewer. In other cases, I have proposed the clearing and opening of swamps, not so much with regard to the neighbouring Bog (generally much higher) as in order to drain the swamps themselves; such places are well worth that operation, as they immediately throw up a luxuriance of grass.

In all the firmer Bogs, where there is a free declivity into the natural water-courses, I have estimated the surface draining at 10s. per acre. It is proper that I show how this may be performed.

The Bog must be laid out into regular inclosures, the size and figure of which will depend on various circumstances, of convenience or necessity; let us suppose them squares of ten Irish acres.

These fields must be separated by ditches, which, if they serve as the common outfall of several fields, must be sunk four feet in depth; but if the fall be quick, or the ditch does not receive any foreign waters, three feet in depth will be quite sufficient.

These ditches might be made with perpendicular sides, and will stand very well in Bog, as may be every where seen in the turf grounds; I prefer, however, making them with the slope of $\frac{1}{2}$ to 1, and only a foot wide at bottom, since that form appears less liable to choke up with herbage, &c. If they are intended to keep out sheep, they must be at least six feet wide at top, though it seems hardly fair to charge this additional excavation to the account of drainage, any more than the row of quicks, which it would be extremely advisable to plant along the side of them. At any rate, a perch of that kind of drain may be very well made for one shilling. In addition to this, if the Bog require it, let four small Drains of one foot in depth be made across the slope, leading into the side fences, giving them a fall in the bottom, if there be none in the ground; such furrows may be made for $1\frac{1}{2}d.$ per perch.

We have then, for each field,

40	Perches head drain,	- - -	at 1 s.	-	-	-	£. 2
40	- D° - side - D°	- - -	- 1 s.	-	-	-	2
160	- D° - cross-furrows	- - -	- $1\frac{1}{2}d.$	-	-	-	1
For 10 acres, is 10 s. per acre							£. 5

When springs occur, which is but a rare occurrence in the Bogs, they should be taken off by a small drain, which, if the Bog is to be cultivated, may be covered. For this purpose, a well-dried turf will answer, if nothing else can be had. The ridges and furrows are to be drawn parallel to the side fences; and in general every shallow pool or receptacle for water should have an outlet formed for it.

From every observation which I have made in this District, comprehending Bogs perhaps of every possible variety, I am quite satisfied of the futility of any method of draining Bogs otherwise than by the surface, in the same manner that we drain clays; but with this advantage in the case of Bog, that the great evaporation from its rough surface, and the capillary attraction of its upper strata, will rapidly draw the water from the interior, when the foreign supply is otherwise provided for. If however the drainage of the lower strata be wished for (and there can be no doubt but it would tend to hasten the subsidence of the Bog) there may be auger-holes sunk at the sides of the Drains down to the gravel, and the core lifted out by the peat borer; and the gravel should by all means be tapped in the catch-water Drains under the moorlands.

The small Surface Drains recommended for the firmer Bogs in Iveragh, may with great propriety be applied to the wet uplands of Slieve Luaghar, or the mountain Bogs in the slate and rubble range. For this purpose, small cuts, of 1 foot to 18 inches deep, are only necessary, and should be led across the slope with only a gentle declivity, but continued perhaps for half a mile in length. They are marked out by the line, with a sharp straight spade, on both sides; the sods are then moved with a deep spade of one foot wide, and lifted by a

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo.

crooked fork; in this way, forty perches of these Drains may be made by one labourer in a day. This system of drainage has been carried on to a great extent on the borders of Scotland, and found to be attended with the most important effects in banishing the rot, and improving the pasture for sheep.

Of the Formation of Soil upon Bog:

We have made but a small step towards the reclaiming of Bog when we have got it drained; it is merely converted into a heathy moor; and will by degrees afford pasture for sheep, or even heavy cattle, but it is so open and porous, that the grasses which it bears abundantly in spring, are frequently destroyed by the droughts of summer. To render it a permanent meadow and fit for agriculture, some much more expensive operations are required. The fibrous texture must be destroyed, and the Bog converted into a vegetable mould.

Top-dressings of gravel, clay-sand or sleet, may be laid on, where they can be conveniently got; they correct the porosity of the Bog, which is one of its greatest defects; clay in particular seems to act very powerfully upon Bog, after being burned or roasted.

The conveyance of these top-dressings over the Bog, is attended with much expense, since a layer of one inch in thickness cannot well be supplied under 6*d.* a cubic yard, or £. 5. 9*s.* per acre, even with the most favourable means of transport; and in many cases would perhaps cost three times that sum.

This method, however, becomes very advisable when the top-dressing can be laid on as alluvion or warp, by means of rivers, or the sea; and this is more frequently practicable than is perhaps imagined. Indeed Bog-stuff itself, which has been transported and thoroughly broken up by running water, is as valuable a soil as any other.

Where the situation will admit of it, the next best method is, to lay a field of Bog of given size under water, and bring the soil over it by flat boats. Embankments for that purpose may often be left in turf-cutting, or even if they are formed artificially, they will not much exceed the expense of stout fences. Rough hillocks or tufts should previously be cut off or burned, or the stuff may be floated into hollows. This method is especially applicable to the low-lying Bog on the rivers, which are embanked for warping, as it will much accelerate the benefit of that process.

When the declivity becomes too great for this method, the stuff which is brought into the Bog by a level canal with boats, may be spread out by waggons, wheelbarrows, &c. or it may be brought on at once by waggons and railways, or if within forty yards, by wheelbarrows alone, &c. &c. And if the subsoil can be got within three or four feet, it may be trenched up with the spade. By none of these methods can it be expected to cost less than 6*d.* a cubic yard. But the improvement which would thereby be produced on the Bog, would render it worth 15*s.* to 20*s.* per acre at the least; and if a dressing of hot lime were applied at the same time, the Bog would be worth 20*s.* to 30*s.* per acre, for pasture alone.

But we may form a vegetable soil of the Bog itself by cultivation and manure. It should be left, after draining, two or three years to consolidate; then it may be ploughed up by horses, or dug over with the spade, forming it into level ridges of two perches in breadth, and then followed by repeated ploughings and harrowing. Lime should then be applied at the rate of 60 to 100 barrels per acre, the Bog ploughed up for the seed left over winter, and oats or rape sown in spring.

The soil which is thus exposed to the vicissitudes of the weather, &c. has its astringent principles washed out, and its texture destroyed, it decomposes into a vegetable mould.

The only danger of the operation is, that as the ploughing can only be done in summer, the sods are apt to dry into turfs ere their texture be altered, the operation should therefore be performed as late in the season as possible, that the sods may be speedily exposed to the winter frost and rains.

Where there is a command of water to be brought over the Bog, this alteration of the soil may be greatly accelerated; and if the water passes with rapidity, the finer particles of Bog-stuff which it transports, may be made to settle on a field below, and will be found a valuable alluvion. The acid and astringent principles being soluble, will pass away with the water, if it be not allowed, as at present, to lie until it be carried off by evaporation. Since the application of water may be made so useful, I have included all the more obvious cases in my estimates.

Lime appears to act chemically upon Bog. It may neutralize the acids; it rapidly dissolves the vegetable fibres, and converts the Bog into friable mould; it seems the best possible manure that can be applied, especially after the Bog has acquired some kind of green sward; if that is not the case, dung or earth should be applied with it, to encourage the grasses to rise. Lime slaked with salt water, is said to be unusually beneficial, and the farmers in applying shell-sand, universally prefer that which is washed by the tide. Every kind of calcareous manure seems beneficial in Bog improvement; and it is truly surprising to see the care with which the small farmers in the south apply the shell sand with bowls on their potatoe beds, nearly as thin as if they were sowing seed.

In all cases of the cultivation of Bogs in Kerry, potatoes have been the first crop, and usually also the second. Dung of some kind is applied with the seed, and there is no complaint of any deficiency of produce. It cannot surely be expected that crops are to be got off any kind of land without manure, and it would therefore be unfair to charge the expense of it to the account of the reclaim of the Bog; it acts powerfully however on that substance, and were more pains taken to collect and preserve manure in Kerry, the quantity of Bog that might be soon reclaimed is very great. At present the dung is chiefly applied to the upland, and the reclaim of Bog is most observable where sea-weed and shell-sand can be easily procured. The fine limestone vale of the Cashen is particularly backward though provided abundantly with lime, a manure which can be multiplied at pleasure. The inhabitants seem perfectly ignorant that the chief sustenance of the southern part of the country is derived from a soil, which either is or has been, a Bog of as forbidding an aspect as any in their neighbourhood. The common method of preparation adopted by them is paring and burning, which is not improper for the rushy upland clays, but is absolute waste when applied to a red Bog; were the clay from the neighbourhood to be procured and burned in clamps or kilns with the Bog-stuff, it might be applied as manure with great advantage: it is only in that way that those ashes, which are heavy and red, seem to be of any benefit. They afford one good and one middling crop only; but as the deep Bog must be afterwards dug over with the spade, and not ploughed, it would be just as well to level the natural turf and improve it with potatoes and manure, or fallowing and lime. By so doing we preserve the whole stock of vegetable or carbonaceous matter for fuel, or the wants of future vegetation, instead of destroying or extirpating it, and having to regret its loss when it cannot be restored.

Of Crops for Bog:

As to the proper crops for bog, much information cannot be expected from the Engineer. It does not appear that any crop is peculiarly unfit for this kind of soil; and accordingly, that is cultivated which is chiefly in request in the country. In Ireland, potatoes; in Scotland; oats; in Germany, pulse; in England, wheat, or rye, are the most commonly tried, and all with success. In grazing districts, rape and turnip are favourable crops in the commencement; cabbages, carrots, &c. afford likewise great returns, and in general every kind of green crop seems to thrive well; so that the cultivator of bog appears to have as much latitude as he would in any other soil. It need only be observed, that frequent cropping renders bog perhaps too open and dry, while by too long continuance in pasture, unless the surface be carefully freed from stagnant water, the aquatics return, and the bog relapses, though never so much but that the effects of the first reclaiming are always visible. Alternate cropping and pasture are therefore most advisable upon bog as upon most other soil.

Upon the whole, I am so perfectly convinced of the practicability of converting the whole of the bogs that I have surveyed, into arable land, and that at an expense which need hardly ever exceed the gross value of one year's crop produced from them; that I declare myself willing, for a reasonable consideration, to undertake the drainage of any given piece of considerable extent, and the formation of its roads, for the sum of one guinea per acre; and to prepare the same, for the reception of any crop, for £. 10 per acre, which is little more than seven years purchase of the rent it would then afford. At this rate, the whole bogs I have surveyed in this district, about 150,000 English acres, might be converted into arable land, for about one million sterling.

Alexander Nimmo.

REP. IV. *Mr. Edgeworth*, on Bogs east of the Shannon; Plan for an Act of Parliament to oblige owners to ascertain their Boundaries.

Mr. EDGEWORTH's Report on Bogs east of the Shannon.

As the Board have, in their instructions, invited their Engineers to give their general opinions, I presume earnestly to entreat the Board to apply to Parliament for an Act to oblige the owners of bogs to have their bounds ascertained.

Till this be done no improvements can be attempted, because the present claimants, not knowing their own rights. and fearful of incurring enormous and unprofitable expense, if they attempt to ascertain them, decline entering into any engagements, when proposals are made to hire or purchase them.

Beside the Reports of the Board, short pamphlets and long books have been written on the drainage of bogs; some of these contain elaborate chemical, botanical, and agricultural enquiries into the constituent parts of bogs, and into their future mode of cultivation, when they shall have been converted into vegetable mould. Without entering into these disquisitions, it may be asserted, that some public experiment should be tried, that might demonstrate to the nation, either that the scheme for improving the bogs of Ireland is practicable, or hopeless.

Such an experiment would cost a mere trifle, compared with what has been already expended in ascertaining the extent of bog in Ireland; it would not amount, in the whole, to one-tenth of a penny for each acre in the island, and no further aid could ever be reasonably required.

The

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Edgeworth.

The Engineers employed in conducting such an experiment, should not be allowed any salary or emolument, except what might arise from the bog which might be entrusted to their management; thus the alarming idea of a job would be avoided.

Nothing but such a plain and indisputable proof of the practicability and profit of reclaiming bog, is wanting, to turn the attention of individuals and of large companies, to this mode of enhancing private fortunes, and of increasing national wealth; and surely such a result arising from their labours, would be the most gratifying reward that could be conferred upon the members of your Board. They have gratuitously devoted much of their time and skill to this object, and they most anxiously wish that their labours may ultimately and indisputably become satisfactory to Parliament, and beneficial to their country.

REP. IV.—*Mr. Richard Griffith*, junior, on the Bogs in Galway and Roscommon near Athlone; sundry Improvements and Methods of reclaiming.

MR. GRIFFITH on the Bogs of Galway and Roscommon.

Composition and Growth of Red Bog :

Instance of the growth
of Bog.

THE composition of the upper and lower bogs is exactly the same, and is similar to that described in my former reports, particularly in the section of the turf-bank in Timahoe bog; * that is, a regular gradation from a spongy moss to a compact mass resembling pitch or pitch coal. In the bog of Kilcashiell (one of the upper bogs) I had an opportunity of observing the annual increase in height or growth of a bog for twenty years, which, in the spot where I noticed the fact, was about two inches for each year; this may seem an extraordinary increase, but the situation appeared to be particularly favourable to the growth of moss.

Twenty years ago, the water from a small lake situated close to the edge of the bog of Kilcashiell, was drawn off by a drain cut from the lake to a stream which runs beyond the edge of the bog; it was intended to improve the bog beneath the water, and that immediately adjoining the banks of the lake; the improvement was not followed up, and the drain was suffered in part to close; the bottom of the lake was now exposed to air, but the bog below remained still highly saturated with water; moss immediately began to vegetate, and has continued to increase in height ever since.

I was enabled clearly to observe this fact, from a turf bank having been cut into the place where the lake formerly was; and from the variety in the colour and texture, I calculated the annual growth of the moss with nearly as much accuracy as the age of the Scotch fir-tree may be determined, by observing the number of concentric rings visible when the stem is cut across.

Vast quantities of ancient timber have been discovered in some of the shallow bogs in this district, but no where in such abundance as in the bogs of Kilcashiell; the kinds most frequently met with are, oak, Scotch fir, and yew. Very large trees have frequently been found; I saw the stem of an oak tree which had been dug up at Clonshee, whose dimensions were 34 feet long, 4 feet diameter at base, and one foot six inches at top. The timber of the oak is always black, and when long exposed to air, it decays; but is excellent for underground or water-works.

The Scotch fir-trees are also very large, and appear to have grown to a great age. The timber is excellent for household purposes and laths. The yew found in the bogs has lately been much used for furniture, it resembles rose-wood, but is superior to it in beauty of colour and firmness of texture. The bog-timber is found lying in all directions, frequently at right angles to, and sometimes crossing each other.

Bog Improvements :

There have been many improvements of bog undertaken, and in part completed by several gentlemen in Ireland; but instances are very rare of red porous bog having been so highly improved as to resemble and possess most of the good qualities of upland, and to be superior to it in many respects.

Improvements at Woodlawn :

Improvements at
Woodlawn.

Commenced in the
year 1760.

The bog improvements at Woodlawn are amongst the most perfect that I have seen; they amount altogether to about 180 Irish acres, or nearly 292 English acres; 25 acres of which are under plantations, now growing with great vigour. These improvements were commenced about the year 1760, by the late Mr. Trench of Woodlawn, and have been continued, and I think I may say completely finished by his son, Lord Ashtown; they are particularly interesting, as they effectually contradict an assertion frequently made, that bog however reclaimed, will again return to its original state, if left undisturbed for a few years.

Mr. *Arthur Young* in his tour through Ireland, has inserted an accurate description (written by Mr. Trench) of the method pursued in reclaiming these bogs. This account is so very interesting and distinct, that I have thought it right to extract it from Mr. Young's book, and to subjoin an account of the present state of the bog-fields at the conclusion of details.

* See First Report of the Commissioners for the Improvement of Bogs in Ireland.

of each experiment ; together with the treatment it has received since Mr. Young was at Woodlawn.

" * Mr. Trench's improvements at Woodlawn made me solicitous to view them ; he was so obliging as to give me a full account of them ; which is as follows :

Extract from
Mr. Young's Tour.

No. 1. " The first method he took was with a bog of twelve acres, exceedingly wet, at the bottom of hills, sixteen feet deep to his knowledge ; but he never was able to measure it to the bottom. A red bog, of a light fuzzy substance, like a bed of tow, which would not burn in turf ; no other product than bog-berries ; part of it so very wet, that he could not cut the drains at first wider than four feet and two spits deep ; repeated this before the hard frost of 1765, had yet made no progress, it being almost as wet as ever, but took advantage of that frost to cover the ice two inches thick with clayey gravel ; when the thaw came, the gravel sunk and pressed out the water ; the expense of this manuring was £.3. 10s. per acre. This gravelling had such an effect, that in the May following above half of it bore horses with baskets for carrying on dung ; and where it could not bear them, it was carried on by men ; the quantity, six bushels to the square perch, and immediately planted with potatoes in the common trenching manner ; the crop per acre, forty barrels, each 44 stone, at 8s. each. Levelled the potatoe trenches in digging for barley ; in doing which, attended minutely to not burying the manure ; this digging cost 30s. an acre ; and the barley covered with the spade, which they do very fast, and the expense included in the 30s. ; the crop of barley, ten barrels an acre at 8s. After this crop, took no more trouble with it ; very rich and luxuriant grass sprang up directly, and would let readily in meadow at 25s. ; but part of it in a few years would let at £.2. Two acres of it were not perfectly reclaimed, it was of the moory nature ; dug and burnt it and put in turnips ; the crop very good ; then dug it for barley ; the produce 14 barrels an acre, and the meadow very good ever since. I was over it, and found it a perfect improvement ; the hay was fine, the herbage good, and carried the complete appearance of a meadow, except in the drains, where the heath still appears."

This bog improvement has now been made about 50 years. Seventeen years ago, it was manured by a light surface dressing, composed of the scouring of bog-drains, together with limestone, gravel, and some lime ; it is now an excellent pasture for sheep or cattle, and has no apparent tendency to return to bog. The sod is so firm, that horsemen may ride over it without sinking in the least, or leaving any visible marks ; the present depth varies from 10 to 18 feet ; it must have been considerably more formerly.

Present state of the
Bog.

No. 2. " Twenty-five acres of spongy fungous bog, from 8 to 16 feet deep, had been cut into very great turf-holes ; which holes, though they held water, and had drowned many a cow, yet had so far drained the bog, as to make the less draining necessary ; effected it, and then levelled the holes ; but as they sunk much, levelled them a second time ; upon this, took the advantage of a frost to manure it with clay and gravel, at £.2. 10s. per acre ; then dunged a part with the quantity mentioned already, and the rest of it manured with the ashes of the moor, which burnt yellow ; upon this manuring planted potatoes, the crop £.10 an acre ; pretty equal, being as good after the ashes as after the dung. After the potatoes, levelled the trenches, dug it, and sowed wheat ; the crop six barrels an acre ; barley, ten barrels ; oats, nine barrels ; then left it for meadow ; the value two pounds an acre."

Extract from
Mr. Young's Tour.

This improvement has remained ever since in the state described above, and has never received any manure whatever, though part of it was formerly so wet that it yielded nothing but bog-berries ; it is still called the " Bog-berry meadow."

Present state of this
improvement.

No. 3. " Another piece of bog of the same sort, light and spongy, drained, and then manured with clayey limestone gravel, mixed with ditch earth. In the summer, planted potatoes ; the crop, 15 barrels an acre ; then dug for oats, six barrels an acre ; meadow ever since, and perfectly good ; would let at one pound ten shillings an acre."

Extract from
Mr. Young's Tour.

This field, which is called the " Rushy Bog," contains seven acres ; it has been reclaimed 48 years ; it was broken up this year for the first time, and manured for potatoes ; the crop very good ; its present value about £.2. 10s. per acre.

Present state.

No. 4. " Another Bog of the same sort, perfectly well drained, manured with lime, " 80 barrels an acre, at four pence per barrel ; planted potatoes, the crop not worth digging ; " dug it for oats, the crop not worth reaping ; then left it in grass, which was indifferent, " not worth more than five shillings an acre."

Extract from
Mr. Young's Tour.

This part is still less good than any of the foregoing ; it has never received any additional manure ; it is now in tolerably good pasture, but the grass is of a blue colour, and looks unhealthy. It may be doubted whether this is occasioned by the want of efficacy in the manure, as above described, or whether it be owing to an admixture of Bog iron ore, which this part of the Bog contains in great quantity.

Present state of No. 4.

No. 5. " Another experiment was on the same sort of Bog, which, when well drained, " was manured in spring with limestone gravel, and then with marl instead of dung, and " planted with potatoes ; the crop worth four pounds an acre ; then dug it for oats, the crop " six barrels ; and then left it to grass, worth one pound five shillings an acre."

Extract from
Mr. Young's Tour.

* See Young's Tour in Ireland, page 232.

(5.)

EXTRACTS
from the Appendixes to
preceding Reports.Rep. IV.
Mr. Griffith, junior.

No. 6. "Another experiment, the same as the preceding, except lime instead of marl; the effect in every respect on a par with the marl; neither of them yielded half the produce which dung or ashes would have done."

No. 7. "Another Bog of the same sort was, after draining, manured with limestone gravel, and then with the scouring of ditches and earth to the amount of three inches and a half deep on the surface; expense in all, four pounds an acre; then left, and nothing more done to it; very good grass the next season, worth for grazing 18s. an acre."

No. 8. "Another spongy Bog drained, and then well gravelled at £.2. 10s. left so for three years; scarce any grass came, the heath still remaining; planted potatoes on it without any dung or other additional manure, the crop £.4. an acre; then dug it smooth and nothing sown in it, but came immediately to very good pasture, worth 15s. an acre."

Present state of the
Improvements, Nos. 5,
6, 7, & 8.

I shall class Nos. 5, 6, 7 and 8 together, as I was not able to discover exactly the particular situations to which those numbers referred; they were however in different parts of what now forms two large fields. These fields have now been reclaimed thirty-five years; they have within the last four years gone through a course of tillage; the two first crops were turnips, manured with compost formed of ten loads of stable dung, and the remainder cleanings of ditches and limestone gravel, at the rate of 40 loads (7 cwt. each) per acre each year; the crops were excellent; the field was last year laid down (without manure) by a crop of oats with clover and rye-grass; the oat crop tolerably good, and the clover and rye-grass, particularly the clover, is very good. Several other extensive Bog fields have been improved within the last 20 years, which are all, except one, No. 8, in meadow and pasture both excellent; No. 8 was this year sown with turnips; the crop (excepting where some water lodged) is very good; it has been reclaimed 18 years.

Colour and specific
gravity of reclaimed
Bog soil.

The soil of these reclaimed Bogs, when first turned up, is of a dark brownish colour; its specific gravity, when compared with earthy soils, is certainly light, but it is much heavier than common Bog-stuff. The whole of the vegetable fibres have disappeared at the surface; however, at three feet deep, the mossy structure is still visible.

Bog plantations at
Woodlawn.

The Bog plantations at Woodlawn are all in a very flourishing state; the trees in No. 9 grow partly on Bog and partly on upland; they have now been planted 55 years. I shall describe the size of the trees both on the Bog and upland, which as they are of the same age, may afford a tolerably fair comparison between the growth of trees in those different situations.

Comparative growth of
timber on Bog and up-
land.

The average dimensions of the trees are as follow:

Ash on Bog, 1 foot 6 inches diameter at base; at the height of 20 feet, where the head branches off, one foot in diameter.

Ash on upland, 2 feet in diameter at base; at the height of 20 feet, about 1 foot 4 inches.

Spruce fir on Bog, 1 foot 4 inches diameter at base; at the height of 30 feet, 10 inches.

Spruce fir on upland, 2 feet diameter at base; at the height of 40 feet, 1 foot.

Beech on Bog, 1 foot in diameter at base; at the height of 20 feet, 6 inches.

Beech on upland, 2 feet in diameter at base; at the height of 20 feet, 1 foot 4 inches.

Observations.

In this plantation, the ash appear to have thriven the best; the roots of the trees growing on the Bog have not shot down, but have grown quite on the surface; some of them, particularly the ash, have formed a hillock of roots, above the general surface of the Bog; the top of the hillock is covered with soil, but at the sides the roots appear uncovered; they differ from common roots, as they are coated with a strong bark, similar to that which covers the stem of the tree.

Process observed pre-
paratory to the plan-
tations.

The other Plantations on Bog at Woodlawn, are from twenty to thirty years standing; they are composed chiefly of Scotch fir, larch, spruce fir, beech, and a few ash; previous to the trees being planted, the Bog had been drained and manured (according to the statement of Mr. Trench) with limestone gravel, and dung; a crop of potatoes was then taken, after which, the trees were planted on the top of the ridges. Some of the Scotch fir (where they had room) have grown very large at the base, but when that is the case, the stem is generally short; the average dimensions of the Scotch fir are 18 inches in diameter at base; at the height of 20 feet, 8 inches in diameter; larch 1 foot diameter at base; and at the height of 30 feet, 6 inches diameter. The beech and ash much smaller; spruce fir are of similar dimensions with the larch.

Average dimensions.

Plantations on Bog at Belview.

These plantations are of considerable extent; they are of different ages, twenty and thirty years. The trees most frequently met with are Scotch fir, larch, beech, alder, birch, &c. of which the Scotch fir and larch appear to have greatly exceeded the others in growth.

Preparatory process
similar to that at
Woodlawn.

The Bog was, for the most part, prepared for planting, by a mode similar to that adopted at Woodlawn; that is, by draining and gravelling the Bog, and afterwards manuring for a potatoe crop; the trees were planted on the top of the ridges, after the potatoes were dug out;

out; in other places trees were planted on the Bog without any preparation, except draining; they have thriven well, but are not so large as those planted on the gravelled Bog. Trees planted with gravel not so large.

The Scotch fir of thirty years growth, where they had room, have become very large, but the stems are short, seldom exceeding 15 or 16 feet in height; this may give them a handsome appearance as ornamental plantations, from their vigorous complexion, and their large heads; but they are much less valuable, on account of the shortness of the timber and the quantity of ground they occupy. Scotch fir of 30 years growth.

Some of these short-stemmed Scotch fir of thirty years growth, are two feet in diameter at base; at the height of sixteen feet (the length of the stem) the diameter is one foot four inches; in other places, where the trees have been planted close together, they have grown much taller, but are less gross; their average diameter is one foot six inches at base; at the height of from 25 to 30 feet, from ten inches to one foot. 2 feet diameter at stem, and 1 ft. 4 in. at the height of 16 feet.

The Scotch fir trees planted twenty years ago, are on an average ten inches diameter at base, and twenty feet high. The larch trees, where they have been exposed to the northerly and westerly winds, have not succeeded as well as the Scotch fir; they have yielded to the westerly wind, and many have been killed by the blast; those planted to the southward and eastward of the plantations have grown well; some of them of thirty years standing are eighteen inches diameter at base, and forty feet high; their average is about one foot four inches diameter at base, and from 35 to 40 feet high. Scotch fir of 20 years growth 1 ft. 6 in. at base, and 20 feet high. Larch of 30 years standing, average diameter 1 ft. 4 in. at base, and from 55 to 40 feet high.

The average of those planted but twenty years, is from ten inches to one foot base, and from 25 to 30 feet in height. The alder, beech, and birch, though planted at the same periods with the Scotch fir and larch, are not nearly as large, even at the south side of the plantations; but alder is very valuable as shelter for other trees, and should always be planted to the northern and western edges of Bog plantations. Among these plantations there are several opens where single trees have been planted (chiefly Scotch fir); in these cases the Bog is covered with excellent grass, which is mowed every year; in fact the only exterior circumstance by which the reclaimed Bog can be distinguished from the neighbouring upland is, by observing that the grass growing on the former is much thicker and longer, and apparently more luxuriant than that which grows on the upland. Observations. The grass on the improved Bog among the plantations, superior to that among the trees on the upland plantations.

Plantations of Scotch Fir on Bog at Tomoronco.

These plantations belong to Sir Richard St. George, Baronet; they are not large, but they are rendered remarkable by their uncommon growth, though planted on Bog merely drained, without any other preparation whatever. Scotch fir trees, four years old, were planted in the Bog six years ago; they are now, on an average, nine feet high. When the plantation was commenced, the surface of the Bog was covered with heath, which has since disappeared, and excellent natural grass has grown in its place. Adjoining this plantation, there was another attempted, nearly at the same time; the trees, when planted, were older; they consisted of Scotch fir, larch, and alder; they have, however, almost universally failed. This, at first view, appeared surprising, as the Bog was apparently similarly circumstanced with that where the trees succeeded so well, and from which it was separated merely by a drain; but on examining the sides of the drains, I found great quantities of Bog iron ore (in a decomposed state, containing sulphuric acid), near to the surface. It is not to be wondered at that the trees died away in such a soil. As this bed of iron ore seldom exceeds six inches in thickness, and is close to the surface, I think it probable that the Bog might be made to produce good green crops and grass, by simply ploughing deep enough to include the bed of iron ore, and afterwards burning the soil ploughed up. Uncommon growth of trees on Bog merely drained, without clay, gravel or manure. Failure of another plantation under apparently similar circumstances. Supposed cause of the failure.

Reclamation of Bog at Clonfert.

The improvements on Bog made by the Bishop of Clonfert, though not very extensive, deserve attention from the very uninviting prospect which they held out previous to their drainage. The Bog of Clonfert, of which they form a part, is very wet, and is deeper and more extensive than any bog in that part of the country; and, upon the whole, exhibits a most unpromising appearance to the reclamer of Bog. These disadvantages have not disheartened the Bishop of Clonfert; who has effected a valuable improvement by the common method of draining, and manuring with limestone gravel, or white shell marl, of which there is inexhaustible quantities along the banks of the Shannon. The crops which I saw on the Bog at Clonfert were wheat, oats and hay; the produce of the wheat crop was considerable, but the grain small, and not well coloured; the oats and meadow were both very good. The bog-fields are for the most part surrounded by double ditches, and plantations have been made, without any manure, in the spaces between them; the trees appear to be in a thriving state, particularly the Scotch fir, birch and poplar. Unpromising appearance and extent of the Bog. Process draining, limestone, gravel, and white marl. Crops.—Wheat, the grain small and not well-coloured; produce considerable; oats and meadow, very good. Bog fields surrounded by plantations in a thriving state.

The Bishop of Clonfert has not preserved any account of the money that has been expended on this reclaimed Bog, which prevents my entering more minutely into the detail of those improvements. I have been more fortunate at Hodson's Bay; and I think the following account of the improvements at that place will be found interesting and instructive to all improvers of Bog. No account preserved of the expense of improvements.

Improvements at Hodson's Bay.

The Bog Improvements at Hodson's Bay were commenced in the year 1797, on a small scale; but Mr. Hodson, finding it much to his advantage, has continued, every succeeding year, to reclaim a fresh piece of red bog. Improvements commenced in 1797 on a small scale, and regularly enlarged every year since.

Somewhat drier than other Red Bogs.

Dimensions and number of drains.

Fields divided by drains into rectangles of about $3\frac{1}{2}$ acres each field, expense of draining, 7s. per acre.

Process of improvement.
First year.

Second year.

Third year.
Rye found preferable on Bog to oats or barley.

Fourth year, meadow.

The Bog of Hodson's Bay forms part of the great Bog of Curraghmore; it is now, however, separated from it by the road from Athlone to Roscommon. On examining those parts which still remain unreclaimed, I found them to be exactly similar to other red bogs, both in composition and depth. They are, however, much drier than is usual: this is owing to the road drains which have carried off a great portion of the water, and have consequently rendered the present drainage much less expensive.

The dimensions and number of the drains which Mr. Hodson has found sufficient for the drainage of his Bog are,—

First.—Discharging drains 4 feet top, 1 foot 6 inches bottom, and 3 feet deep; these drains, with an allowance for second and third cleaning, cost him but sixpence a perch of seven yards lineal.

Second.—Surface drains, two feet top, one foot bottom, and one foot six inches deep, with the above allowances. These drains stood Mr. Hodson in but three-pence a perch.

The discharging drains are cut through the bog in the direction of the fall, and are placed at the distance of one hundred yards from each other; the surface drains are cut at right angles to the discharging drains, and are placed at the distance of two hundred and fifty yards from each other. These drains divide the bog into rectangular fields of nearly $3\frac{1}{2}$ Irish acres. The expense per acre of this drainage amounts to but seven shillings. Though the system of drains, as above described, may appear very trifling, they have answered perfectly well in the bog of Hodson's Bay; but they could not be expected to have any considerable effect in an extensive wet bog.

Mr. Hodson's mode of reclaiming Bog.

After the bog had become sufficiently solid by draining, Mr. Hodson drew out and spread 600 loads (each 6 cwt.) of limestone gravel of excellent quality, at three-pence per load, which is equal to £. 7. 10s. per acre. In addition to this, he also drew out from Athlone 60 loads of stable dung, which cost him £. 4. 10s. The dung was not intended to reclaim the bog; as Mr. Hodson considers the limestone gravel fully adequate to that purpose; but solely to increase the value of the first crop, which is always potatoes, and yields on an average 28 barrels of 42 stone per acre.

The second year Mr. Hodson again covers the surface of the bog with limestone gravel, at the rate of 200 loads per acre; this cost him £. 2. 10s. He also lays out 30 loads of stable dung, which stands him in £. 2. 5s. He then plants a second crop of potatoes, which is always superior in quantity and quality to the first; the average product being 40 barrels of apple potatoes of 42 stone.

The third year Mr. Hodson lays down the Bog with rye and grass seeds. He prefers rye to oats or barley, as it never fails. He has found by experience that oats run too much to straw, and that the grain never fills; and that barley, unless in very particular seasons, yields a very moderate return. The produce of the rye crop, he found, on an average, to be eight barrels of twenty stone to the acre, and also two ton 8 cwt. of straw; which might be sold on an average for two guineas a ton at Athlone; and Hodson's Bay is nearly three miles distant from that town. Mr. Hodson, however, makes use of his straw for manure.

The fourth year, meadow, which is always excellent.

The following Account of the several items of Outlay, when contrasted with the Returns, will place the matter in a clear point of view.

Dr.—or Outlay.

First Year:

	£.	s.	d.	£.	s.	d.
Draining, per acre	0	7	—			
Drawing out and spreading 600 loads of limestone gravel, each load 6 cwt. at three-pence per	7	10	—			
Ditto - - 60 loads of stable dung	4	10	—			
Planting potatoes	2	8	—			
Digging and gathering ditto	2	8	—			
Seed, 4 barrels of 16 stone each barrel, 42 stone at 10s. per	2	3	10			
Contingencies	1	—	—			
Total Expenses of the First Year				20	6	10

Second Year:

Drawing out 200 loads of gravel as above	2	10	0			
Ditto - - stable dung, 30 loads	2	5	0			
Planting potatoes	1	16	0			
Digging and gathering ditto	2	8	—			
Seed, as above	2	0	—			
Contingencies	0	10	—			
Total Expenses of Second Year				11	9	—
Carried forward				31	15	10

Brought forward - -	£. s. d.	£. s. d.
	- - -	31 15 10
Third Year:		
Levelling potatoe ridges and sowing rye - - -	2 - -	
Sowing hay-seed - - - - -	- 10 -	
Seed, rye, one barrel of 20 stone - - - - -	1 - -	
Eight barrels hay-seed, at 4s. per - - - - -	1 12 -	
Reaping and threshing - - - - -	1 9 -	
Contingencies - - - - -	- 7 -	
Total Expenses of the Third Year - -	- - -	6 18 -
Fourth Year:		
Meadow, no expense; after which Mr. Hodson has let the bog for three years, at £.5 per acre, or for £.1. 10s. per acre on a lease of 21 years - - - - -	- - -	- - -
Total Expense of Four Years Cultivation - -	- - £.	38 13 10
Cr.—or, Return.		
First Year:		
28 barrels of potatoes, common kind, generally white potatoes, each barrel 42 stone, at 10s. per - - -	- - -	14 - -
Second Year:		
40 barrels of 42 stone, apple potatoes at 14s. per - - -	- - -	28 - -
Third Year:		
8 barrels of rye, 20 stone per barrel, at £.1 per - - -	8 - -	
2 ton 8 cwt. of straw, at 2 guineas per - - -	5 10 -	
	- - -	13 10 -
Fourth Year:		
Meadow lets for - - - - -	- - -	5 - -
Total amount of Return on the Crops of Four Years - - -	- - -	60 10 -
Total Expenditure on Four Years Cultivation - - -	- - -	38 13 10
Profit of one Acre of Bog for Four Years - - -	- £.	21 16 2

From the foregoing statement it appears, that Mr. Hodson has a return of £.5. 9s. per acre per annum profit on his reclaimed bog for four years; and further, that the bog is at the end of that period of such value as to let as meadow ground for three years at the rate of £.5 per acre per annum; or if let on a lease of 21 years at £.1. 10s. per acre. Profits arising from the foregoing process.

A man of the name of Quigley, who lives on the north side of Barrymore Hill, pays three guineas per acre for reclaimed Bog of similar quality to Mr. Hodson's; with the exception, that Mr. Hodson's Bog has excellent limestone gravel close to it, and Quigley has none; yet this man appears to be perfectly satisfied with his bargain, and says he would be sorry to part with it. He has a lease of 21 years. Reclaimed Bog let on a lease of 21 years, for 3 guineas per acre per annum.

Plantations at Hodson's Bay.

These plantations were commenced eleven years ago; they consist of Scotch fir, larch, spruce fir, birch, alder, oak, ash, and Canadian poplar. The trees were planted partly on prepared potatoe ground, and partly on drained red bog. Those in the potatoe ground were planted after the digging of the first crop in the furrows; and the other crops, viz. the second potatoe crop and the rye and grass followed in the same manner as if the trees were not planted; and as there was no ploughing (every thing being done by the spade) the trees were not injured. The larch and Scotch fir have succeeded the best. Larch planted eleven years, are fourteen feet high, and four inches diameter at base; Scotch fir of equal standing, twelve feet high, and six inches in diameter at base; the other trees are much smaller, except the Canadian poplar, which grows remarkably fast. The trees planted on the unprepared bog are Scotch fir and birch; as yet they appear to have thriven nearly as well as on the prepared bog. Plantations made eleven years ago; Larch and Scotch fir succeeded best.

I am indebted to Mr. Hodson for the chief part of the details contained in the above description of his improvements on bog; fearing, however, that I might have misunderstood

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

260 Irish acres of re-claimed Bog sets on an average at 3 guineas per acre per annum; other improved Bog at 3 l. per acre, while upland adjoining these, sets for no more than 1 l. 10 s. per acre.

Difficulty of procuring long leases retards improvement.

stood him in any point, I have submitted the foregoing paper to his consideration, and he returned it to me in its present state as perfectly correct.

Reclaimed Bog on the West side of the Shannon close to Athlone.

The upland on the west side of the River Shannon, in the neighbourhood of the town of Athlone, is entirely composed of ridges of limestone gravel, with scarcely any vegetable mould on the surface; manure is thrown away on such a soil, as, owing to the very porous stratum below, it disappears after one crop. This circumstance led the inhabitants of Athlone to attempt improving the bog at the base of the gravel hills, and the result has surpassed their most sanguine expectations; I was not able to ascertain the period when these bog improvements were commenced, but they are not of very ancient date. The extent of the improvement to the south of the fort of Athlone is 260 Irish acres, or 416 English acres, which sets on an average at three guineas per Irish acre; that to the north of the fort, as far as the hill of Barrymore, sets on an average for £.3 an acre, whilst the upland hills only let at the rate of £.1 10 s. per acre. The chief manures used in reclaiming these bogs, is dung from Athlone; and where the bog is near the hills limestone gravel is also used. The rotation of crops is exactly similar to Mr. Hodson's, except that oats are substituted for rye. The difficulty of procuring long leases, is the only impediment to the great extension of the bog improvements in the neighbourhood of Athlone.

Number and Dimensions of Drains proposed. *

In laying out drains for the improvement of the bogs contained in the district of the River Suck, I have followed exactly the system I recommended in my second report on the district of the River Barrow; which is as follows: The first class are main drains, which are placed in the lowest situations. Their dimensions are proposed to be fourteen feet top, two feet bottom, and twelve feet deep; but these large drains are never required, except when a number of minor drains are necessarily pointed to a situation where there is no natural stream; this so rarely occurs, that in the whole district of the River Suck, I have not found it necessary to lay out any main drains. Into the main drains, smaller ones, which I have called minor drains, are proposed to be cut, generally obliquely from the summits of the bogs to the main drains, or the natural streams, so as to take advantage of the greatest possible fall: their dimensions are nine feet top, one foot bottom, and eight feet deep: These minor drains are proposed to be carried at the distance of a quarter of an Irish mile from each other. Intermediate between the minor drains, it is proposed to cut drains of still smaller dimensions; viz. six feet top, one foot bottom, and five feet deep; and further, at right angles to the minor and intermediate drains, a system of cross drains of similar dimensions with the intermediate drains, is proposed to be carried 280 yards asunder, which would divide the bog into square fields of ten Irish acres.

The third class of drains being surface drains, are intended to divide the ten-acre fields into three parts, by two drains, to be cut parallel to the minor and intermediate drains, that is, in the direction of the fall. The whole of the foregoing drains, if executed, would divide the bog into rectangular patches 280 yards long by $93\frac{1}{2}$ broad, which is equal to $3\frac{1}{2}$ Irish acres.

The dimensions of the surface-drains are four feet top, one foot bottom, and three feet deep.

REP. IV. Mr. Richard Griffith, junior, on the Mountains of Dublin and Wicklow; general Observations on Mountains; Fiorin Grass, &c.

Mr. GRIFFITH on the Mountains of Dublin and Wicklow.

THE rapid rise in the price of corn, and in fact of all agricultural produce, has of late years, induced some gentlemen to attempt the improvement of boggy and waste lands; and essays, proving the benefit which would accrue from such improvements, have appeared in the Transactions of many of the Agricultural Societies in the United Kingdom.

Most of these Essays have laid down rules for reclaiming the lands of which they treat; but those rules are not in general applicable in detail to the improvement of the Wicklow mountains, which differ in climate and local circumstances from all other uncultivated districts with which I am acquainted. These peculiarities will be described at length in the progress of the Report;—they consist chiefly in the facility of access to the uncultivated parts, by means of roads, the vicinity of highly improved lands and industrious inhabitants; the frequent occurrence of beds of limestone gravel and marl, the best manure for the amelioration of mountain soils; and, lastly, the uncommon mildness of the climate.

It is impossible to lay down any system of improvement, which is equally applicable to the reclamation of a flat mountain summit, a steep declivity, a deep valley, or the several approximations to each of these extremes; a few general observations may however prove beneficial.

* In my Report on the Eastern Division of District No. (I.) I have given a Section of the form, and description of the process which I should recommend to be adopted in sinking main drains. See page 53, First Report of Commissioners for Drainage of Bogs in Ireland.

If the summit of a mountain be flat and boggy, the first object should be to drain it; the mode of effecting which will depend on whether the moisture be occasioned by condensed vapours, or by springs of water issuing from fissures in the rock; if the latter, the direction and dip of the stratification of the mountain should first be ascertained, as by this knowledge we shall be enabled to determine the proper situation and direction of intercepting drains, to cut off the water from the springs, and discharge it into the nearest valley, or make use of it for irrigation, if it be thought advisable. In many instances, these intercepting drains will be found sufficient; but if they are not, surface-drains one foot deep, and as narrow as they can be made, should be cut from 20 to 50 yards asunder. In cases where there are no springs, these latter, with proper discharging drains, are all that is requisite.

Having effected the draining, the next object is to consider the nature and depth of the bog or moory soil, and the immediate substratum; if the bog or moor yield yellow or red ashes when burned, the drain-surface should be ploughed, and afterwards gathered into heaps, and burned; this being done, the ashes should be spread, and grass-seeds sown; the result will be, excellent pasture in the course of two years. If the ashes be white, clay from beneath the bog should be mixed with the turf, previous to burning; but this will not answer, owing to the increased expense, if the bog exceed 3 feet in depth.

On the precipitous sides of mountains, where ploughing would be difficult, I should recommend that intercepting drains be cut nearly on a level along the face of the declivity, to catch the water which may fall from the summit, and these drains will be found sufficient, without other aid, to render the surface comparatively fertile, as I have observed a much greater natural tendency to the growth of grass on the sides of mountains than on flat bogs.

In the bottom of deep valleys any species of cultivation may be followed, as the soil is generally capable of producing every kind of grain; however, great care is here requisite to render the drainage perfect, and in all instances, catch-water drains must be cut along the base of the declivities to intercept the water falling from the mountain sides; limestone gravel or marl is frequently met with in the valleys; where the surface is boggy, it is generally of the compact kind, which yields red ashes, a manure superior to all others for the productions of green crops.

There is one general observation, which is equally applicable to all uncultivated mountains and valleys; viz. that all situations are capable of improvement where the soil is deep and wet, and where water can be removed at pleasure; but in those places where the soil is dry and light, little can be done, except by irrigation, and that will not be found to answer unless water be in abundance, which rarely happens in such cases.

Fiorin Grass.

This most useful grass, first brought into notice by the indefatigable exertions of Dr. Richardson, has lately acquired so much celebrity in the agricultural world, that I think it necessary to say a few words respecting its nature and properties; especially as the greater part of the flat moory valleys and gentle declivities of the uncultivated mountains of the county of Wicklow, seem peculiarly adapted to its production.

Many experiments have already been made on the cultivation of this grass, some of which have been unsuccessful, from various causes, but generally from the ignorance of experimentors, in planting grasses which were not the true *Agrostis Stolonifera* or Fiorin grass; indeed great difficulty appears to exist in distinguishing it, even amongst botanists, from the *Agrostis Alba*; which, though similar in many of its external characters, possesses none of the nutritive properties for which the true Fiorin grass has obtained such just celebrity.

Dr. Thornton, a Member of the Royal College of Physicians in London, has lately written a Paper in "*The Farmer's Journal*," on this subject: I shall extract that part of it which describes the distinguishing characteristics of the *Agrostis Stolonifera* and *Agrostis Alba*; and which points out also a difference in the Fiorin grass itself, which cannot be too carefully attended to in its cultivation.

"In the *Stolonifera*, the fibres are very much branched; in the *Alba*, they descend straight; in the *Stolonifera* the vagina of the leaves, or that which covers the culm, is striated or furrowed; and in the *Alba*, smooth: the stipules of the *Stolonifera* are many-cleft; in the *Alba*, bifid; valves of the calyx in the *Stolonifera* are acute; in the *Alba*, obtuse; petals in the *Stolonifera* obtuse; in the *Alba*, acute; if awned, the arista of the *Stolonifera* arises at the base; in the *Alba*, near the apex: to which we may add, stem hollow betwixt the points, which are closer and fewer. *Alba*, solid and more distant *Stolonifera*: which last circumstance accounts for its containing such a quantity of saccharine matter, like the sugar-cane, and being so tenacious of life, for when cut, after several months it will look green, and even vegetate, if hung up in the house. It is this circumstance which renders this grass such excellent winter food, instead of turnips and carrots, and so salubrious to cattle, and which will account for Doctor Richardson's making hay, or rather cutting down this grass in the month of November. It is said, by Mr. Curwen, to yield 20 tons of green food yearly per acre."

"In the Subscription Botanic Garden of Mr. Salisbury, in Sloane-street, the *Agrostis Alba* and *Stolonifera* are placed in patches near each other, and the Irish Fiorin grass in another

(5)
EXTRACTS
from the Appendixes to
preceding Reports.
Rep. IV.
Mr. Griffith, junior.

(5.)
 EXTRACTS
 from the Appendixes to
 preceding Reports.
 Rep. IV.
 Mr. Griffith, junior.

other place: and all the gardeners there are persuaded, that the Irish and English Fiorin grasses essentially differ; and the least observant eye must remark a superior degree of perfection in the former grass; and all those who have examined Doctor Richardson's specimen, notice a great superiority over such grasses as have been sold at even five shillings a plant, and distributed over the country as the true Fiorin grass, collected at Bagshot Heath, and other parts: I believe it to be a distinct variety; and it is of the utmost importance that Doctor Richardson should *stand* or *fall* by the *grass* he has cultivated; and the world is much indebted to that philanthropist for the vast pains he has taken to diffuse a true knowledge of the subject.

According to the analysis made by the Honourable Mr. George Knox, Fiorin grass contains 25 per cent of very sweet nutritious matter soluble in water, of which ten per cent appears to be saccharine matter, or a substance very much resembling sugar. From one pound of the sweet extract, when properly fermented and distilled, four ounces of strong spirits, specific gravity 930, were obtained, which is in the proportion of one ounce measure of spirit for every pound of grass. This product was obtained from experiments made on a small scale: when tried on a larger, six pounds of grass was found to produce one pint of moderately strong spirit, in flavour very much resembling whiskey, but of the two, rather preferable. Sir Humphry Davy has also been lately engaged in making comparative experiments on the grasses. His results, as I have been informed, for they are not yet published, do not exactly coincide with those of Mr. Knox. From 1,000 parts of Fiorin grass, Sir Humphry Davy obtained 76 parts of nutritive matter, of which 64 was mucilage, or starch, 8 sugar, 1 gluten, and 3 extract. Fertile meadow grass and sweet-scented soft grass, were the only ones that produced more nutritive matter than fiorin; 78 parts in 1,000 were the product of the former, and 82 of the latter, but neither of them gave so much sugar, the first yielding *five* parts, and the latter *four*. From these data it appears, that Fiorin grass, though inferior to the foregoing in the quantity of nutritious matter, is greatly superior in the quantity of saccharine matter; and if Sir Humphry Davy's experiments had been made on Doctor Richardson's Fiorin grass, which, as already observed, is superior to the English, it is probable that his results would have agreed with Mr. Knox's, and if so, it would have appeared that the quantity of nutritious as well as saccharine matter contained in the Fiorin grass, would greatly exceed that of any of the other grasses.

There appears to be great variety of opinion as to the proper situations for planting Fiorin grass. Doctor Richardson seems to think it will flourish every where, even on the summits of lofty mountains. This, I fear, is rather doubtful; and whenever the experiment is tried, it should be conducted with the greatest care and skill, as so much prejudice exists against the introduction of every thing which is new, that any want of success in experiments made on Fiorin, may prove highly injurious to its general adoption: in such cases, few enquiries are made as to the peculiar soil or situation, in which the experiment has failed, or the mode of cultivation that may have caused its failure; but the general impression remains, that Fiorin grass does not merit the high character it has obtained.

In preparing the soil for this grass, the greatest care should be taken to keep it clean and free from weeds, otherwise the young plants, which are very delicate, will be destroyed; but if kept perfectly free from other plants in the beginning, it will soon extend itself and mat on the surface, to the total exclusion of other grasses or weeds: moist situations appear to be peculiarly adapted to its growth; it is therefore superior to all others for reclaimed Bogs, moor, or water meadows; but if highly manured, immense crops of it may be obtained on dry upland; and where distillation is the object, it is probable that grass so obtained will be found superior to that raised on moist situations.

The best preparation of Bog or moor for this grass, is burning the surface. On upland, it should be planted in drills, after a potatoe or turnip crop. The grass should be cut down about the end of October, and care should be taken to expose it to the wind for a few days, to prevent any ill effects arising from the putrefaction of the sheath and side leaves.

REP. IV.—Mr. *Richard Griffith*, junior, on Tyrawley in Mayo, and Tyreragh in Sligo; probable origin of Bogs, &c.

Mr. *Richard Griffith*, junior, one the Baronies of Tyrawley and Tyreragh.

Speaking very generally, the boundaries of this great limestone valley may be traced on the northern side by a line drawn from Dublin Bay, and passing by Navan, Granard and Longford, to Carrick-on-Shannon, and afterwards by Boyle to Colooney, Foxford, and Castlebar. The southern boundary is not so easily traced, as there are several ramifications from it passing by narrow isthmuses between primary and other formations.

Departing again from Dublin Bay, the southern boundary may be described by a line drawn from thence by Milltown, through Newcastle and the Red Hill, in the county of Kildare to Brown's Hill, which is two miles to the east of Carlow, on the river Barrow. At this place, the limestone valley becomes very narrow, and passes between the granite country of the county Carlow, which it overlays and the Kilkenny coal district, which lays over it. At Gore's bridge this limestone valley expands, and afterwards branches off into the counties of Kilkenny and Tipperary.

Commencing

Returns,							£.	s.	d.
12 barrels of Oats	-	-	-	-	-	-	8	8	—
70 ditto - - Potatoes	-	-	-	-	-	-	17	10	—
12 ditto - - Oats	-	-	-	-	-	-	8	8	—
5 Years Hay and Pasture	-	-	-	-	-	-	10	—	—
							£.		
Profit of 2d Rotation - -							44	6	—
							£. 22. 16s.		

The Bog should now be limed on the sward, if this was not done ere beginning the second Rotation.

The REPORT of Mr. Richard Griffith, junior, on the Bog Improvements at Chat Moss, in Lancashire;—With Two Engravings, viz.

Pl. XVII.—SECTION of the Edge of Chat-Moss, near Burton ;
Mr. Roscoe's Process of cutting Bog Drains ;—and,
Side View of Mr. Roscoe's Bog Plough.

Pl. XVIII.—Perspective VIEW of Mr. Roscoe's Horse Patten ;—
Side View of the Horse Patten ; and,
Plan of the Patten with the Straps open to receive the Hoop.

Report on the Bog Improvements at CHAT-MOSS, in Lancashire :—By Richard Griffith, junior, C.E. F.R.S. Edinburgh ; Honorary Member of the Geological Society of London.—1812.

To the COMMISSIONERS appointed to enquire and examine into the Nature and Extent of the several Bogs in Ireland, and the Practicability of Draining and Cultivating them, and the best Means of effecting the same.

Gentlemen,

IN the month of January last, I proceeded, according to your directions, to view the extensive Bog Improvements at Chat-Moss, in Lancashire.

I have now the honour of submitting to your consideration, a Report on the present state of those Improvements, together with some account of the peculiar implements of husbandry which are in use at that place.

Previous to the publication of the Reports of the Commissioners for the Improvement of Bogs in Ireland, it had been imagined, by many English gentlemen, that the Bogs of Ireland were similarly circumstanced to the Fens in *Lincolnshire*. These erroneous ideas are now, no doubt, in a great measure, removed by your First Report to Parliament, wherein the distinguishing features of the Fens and Bogs have been clearly portrayed ; it may not however be unimportant to state, that the Mosses of *Lancashire* are exactly similar, in situation and composition, to the Bogs of Ireland, and consequently that any Bog or Moss Improvements that have been accomplished in Great Britain, may also, with equal facility, be carried into effect in this country.

The county of *Lancaster* contains no less than 26,500 acres of Moss Land, the greater part of which is at present in a wild and unproductive state. No improvement worthy of consideration had been attempted till the year 1793, when Mr. Roscoe, of Allerton Hall, near Liverpool, and Mr. Wakefield, commenced the improvement of Trafford Moss. This Moss is small and not very deep ; it is situated about four miles from Manchester, between the Duke of Bridgewater's Canal and the river Irwell. The reclamation of this Moss has been completed for some years, and is now fully equal in value to any land in the country ; it has been let for five pounds per English acre ; the lease is now expired, and Mr. Roscoe was offered, by a respectable tenant, six pounds per English acre for it, which is equal to £. 10. 10s. 7d. Irish money per Irish acre, provided he should agree to cover the surface with a thin coat of Marl. Mr. Roscoe has refused this offer, deeming it more advantageous to retain this improved Bog in his own hands, as a change for his sheep from his great Bog improvement at Chat-Moss.

CHAT-MOSS is by much the most extensive lowland Bog in England, it contains 7,000 English acres ; it is in every respect similarly circumstanced with our Irish Bogs, in regard to the adjoining country, being bounded on all sides by ridges of ground or rolled stones mixed with clay, which prevent the immediate discharge of its waters into the nearest river. This is particularly exemplified by the ridge of gravelly soil, which prevents the waters from the south-east side of this Moss from immediately discharging themselves into the river Irwell. It is probable that this bar of gravel, by interrupting the course of the waters, originally caused the growth of Chat-moss. Like most of our Irish Bogs, this moss presents at its edges nearly an upright face ; the spongy surface of the moss being elevated at a very short distance from the edge from ten to twenty feet above the level of the immediately adjoining land.

(5.)

EXTRACTS

*From the Appendixes to
preceding Reports.*

Rep. IV.

Mr. Griffith, junior.

lend. The annexed Plate, No. 1, Fig. 1, represents a section or profile of the edge of the Bog near Barton. The moss in this part is very porous for the upper ten feet, from whence to the bottom, it becomes gradually more compact. The immediate substratum to the Bog is a bed of siliceous sand, which varies from one to five feet in thickness, below which is a bed of bluish and sometimes reddish clay marl of excellent quality.

The marl varies in thickness very considerably; in some parts it is not more than three feet, in others its depth has not been ascertained; below the marl is a bed of sand-stone gravel of unknown thickness; it is this bed of gravel which extends beyond the edge of the Bog, and by forming an undulation in the ground, prevents the direct discharge of the waters from the flat country to the north into the river Irwell.

The depth of Chat-Moss varies from fifteen to thirty (and, as I am informed to forty) feet; its surface is extremely wet, and from its general appearance, I may venture to assert, it presents as uninviting a prospect to a Bog reclaimer, as any to be met with in Ireland.

Mr. Roscoe commenced his operations by cutting drains through 1,500 acres of the moss; his mode of proceeding was simple. The dimensions of the first drains he made, were one foot cube, and were cut parallel to each other, at the distance of fifty yards from one side of the Bog to the other; the expense of cutting these Drains was $1\frac{1}{2}d.$ for eight yards lineal. After the Bog had consolidated on the edges of these drains, their dimensions were increased three feet top, one foot bottom, and three feet deep; this second operation cost seventeen-pence for eight yards. And lastly, when the sides of the drains had again become sufficiently solid, their dimensions were increased to four feet top, one foot bottom, and four feet deep. (See Fig. 2, Plate 1.) The expense of the last operation was fourpence for eight yards; making the total expense of the drain, when finished, to be twelpence halfpenny for eight yards, or a little more than three halfpence per yard, which is equal to $12s. 6d.$ per English acre, or $\text{£}. 1. 0s. 3d.$ nearly per Irish acre.

The foregoing system of drains appear to have succeeded as far as Mr. Roscoe has proceeded in tilling the Bog, as the drains in tillage grounds are necessarily cleaned each year, and the ridges being made at right angles to the drains, the actual surface of the Bog is rendered tolerably firm; but I am persuaded the above-mentioned system of drains would be found insufficient, were the Bog laid down in grass, as well as on account of their trifling depth, as from the want of cross or intercepting drains. According to Mr. Roscoe's present plan, should any interruption to the current of the water take place in any of the drains, by the slipping of the side, or other casualty, the whole of the water in the upper part of the drain would be pent up, and consequently flood the Bog on either side. Such accidents would be interrupted if cross-drains were made, as the water, being interrupted in its usual course would naturally flow through the next cross-drain to the nearest discharging drain. I am of opinion, that the Bog would be much benefited if every second or alternate discharging drain were deepened to five, or perhaps six feet; and if cross-drains were made at right angles, to the discharging drains, at the distance of 300 yards from each other; their dimensions should be five feet top, one foot bottom, and four feet deep.—(See Plate No. 1, Fig. 3.)

In examining those parts of Chat-Moss, through which drains have been cut, I observed that although the surface of the Bog was very wet (which might partly be attributed to a very rainy season, and partly to imperfect draining) it was much more solid than those parts where no drains had been made; and that the Bog Moss had ceased to vegetate, though I found it growing very luxuriantly in the undrained part.

Of the 1,500 acres of Bog through which Mr. Roscoe has cut drains, no more than 200 have as yet been brought into cultivation. On this portion many experiments have been made, with various success. I shall give an account of some of them.

1st Experiment:

Sixty English acres of the Bog were marled with 150 tons per acre; the marl was drawn on the Bog in small carts, having three broad wheels, two behind and one before. The marl being spread, the Bog was ploughed with a plough of a very peculiar construction, and the horses (two in number) worked abreast, and wore large wooden pattens on their feet, (see description of the Plough and Patten). By the assistance of these Pattens, Mr. Roscoe has been enabled to plough with horses, where the Bog was so soft, that men found it difficult to walk without sinking.

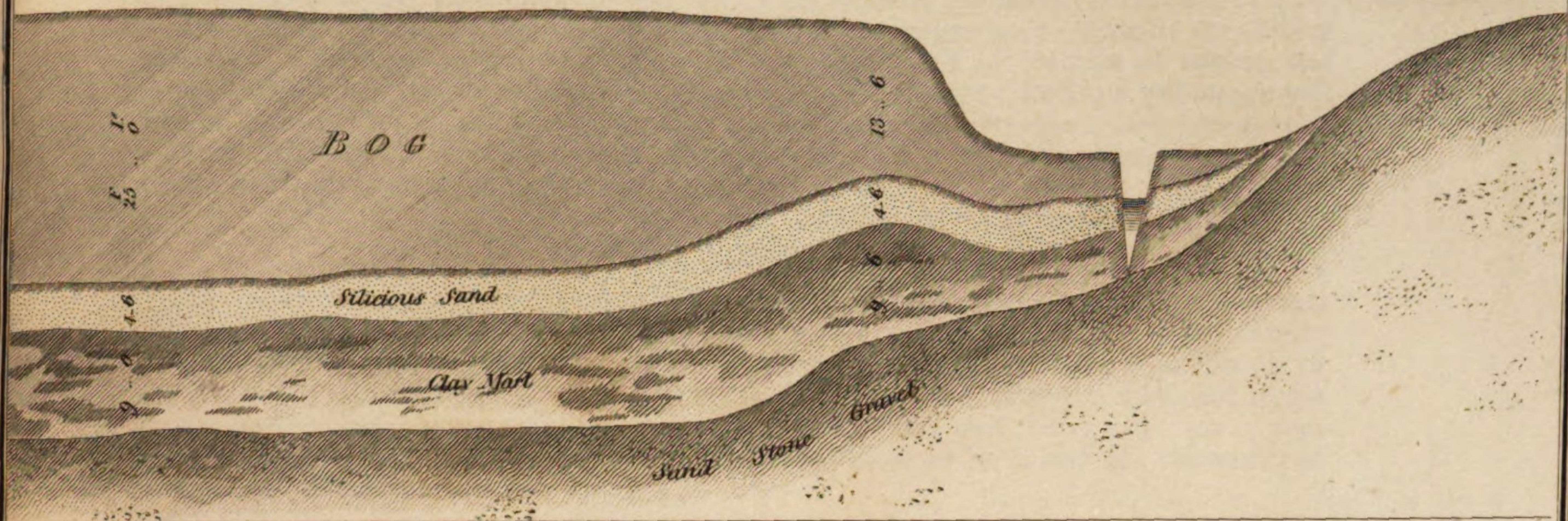
The Bog fields were ploughed at right angles to the drains: By these means, the furrow of each ridge acted as a surface-drain for the ridge, and delivered the water into the discharging drains on either side.

Early in the month of October, after the first ploughing, wheat was sown in the sixty acres, partly broad-cast, and partly in drills; the quantity of seed was two bushels of sixty pounds each for the broad cast, and half that quantity for the drills, per statute acre. The produce of the sixty acres amounted, on an average, to seventeen bushels, each weighing sixty pounds, per acre. This may be considered as a very light crop, when compared with the usual produce of wheat on upland; but it should not be forgotten, that the crop was raised from wet red bog, after one ploughing.

The wheat grown on the bog was of very fine quality; the grain was large, full, and of good colour, and was sold at the next market town, at the rate of $\text{£}. 2. 16s.$ for four measures of

Section of the Edge of Chat-Moss near Barton.

Fig. 1.



*Plan of M^r Roscoe's System of Drains.
with the addition of Cross Drains.*

*M^r Roscoe's Process of Cutting
Bog Drains.*

Fig. 2.

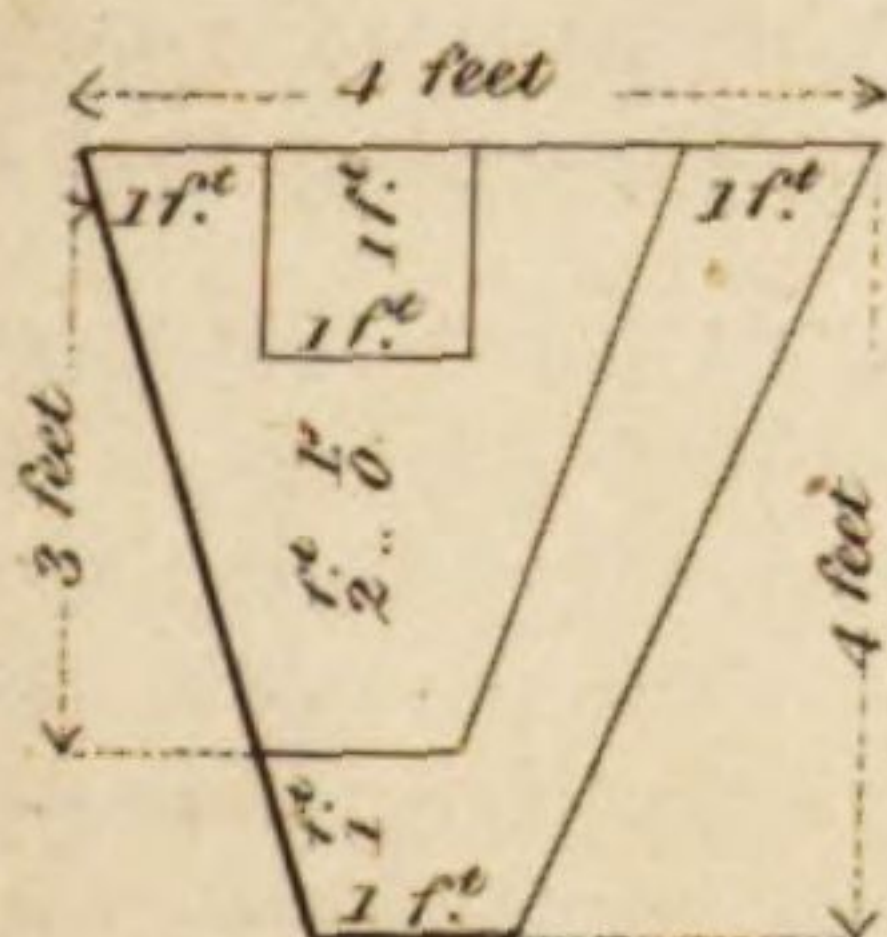
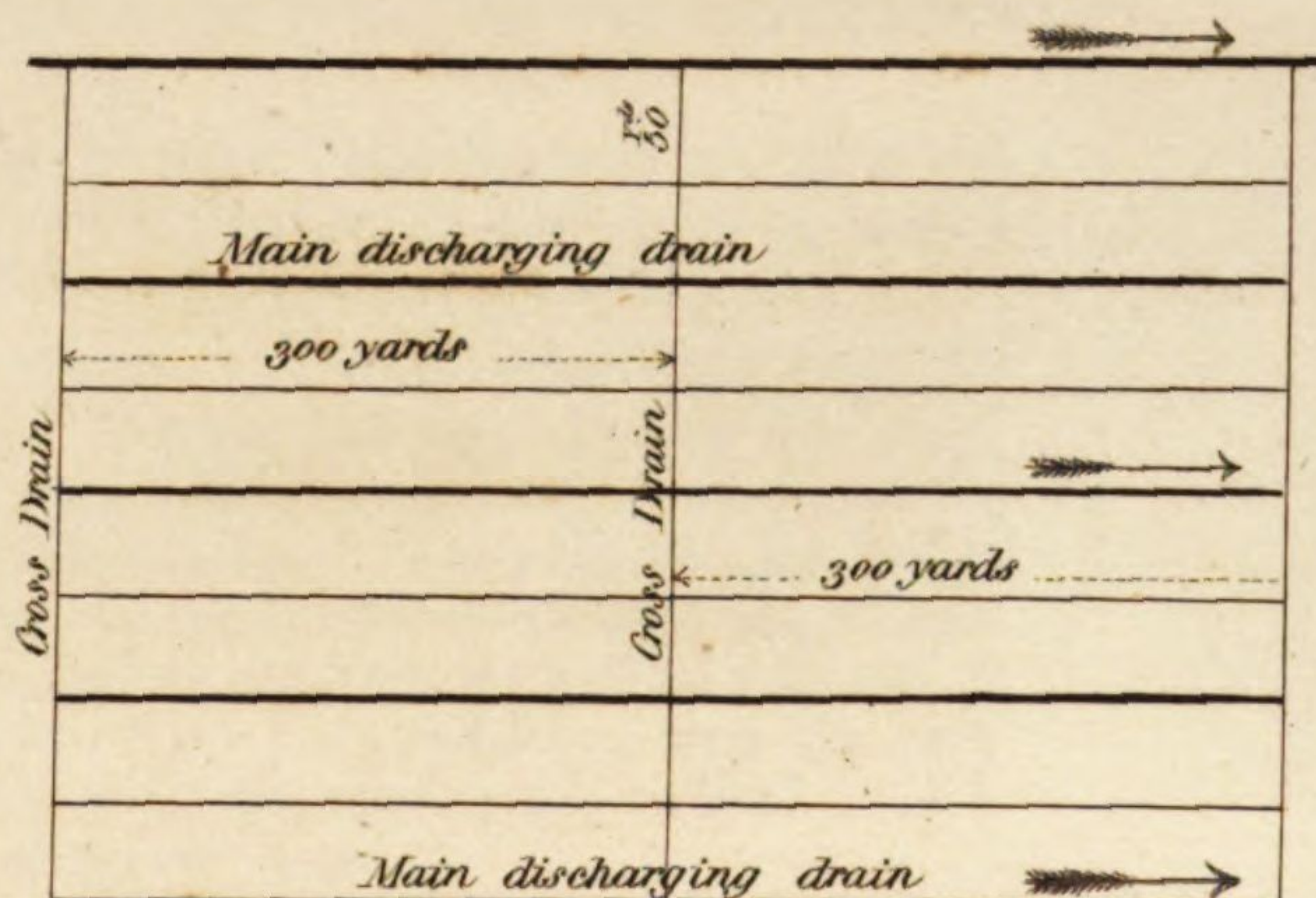
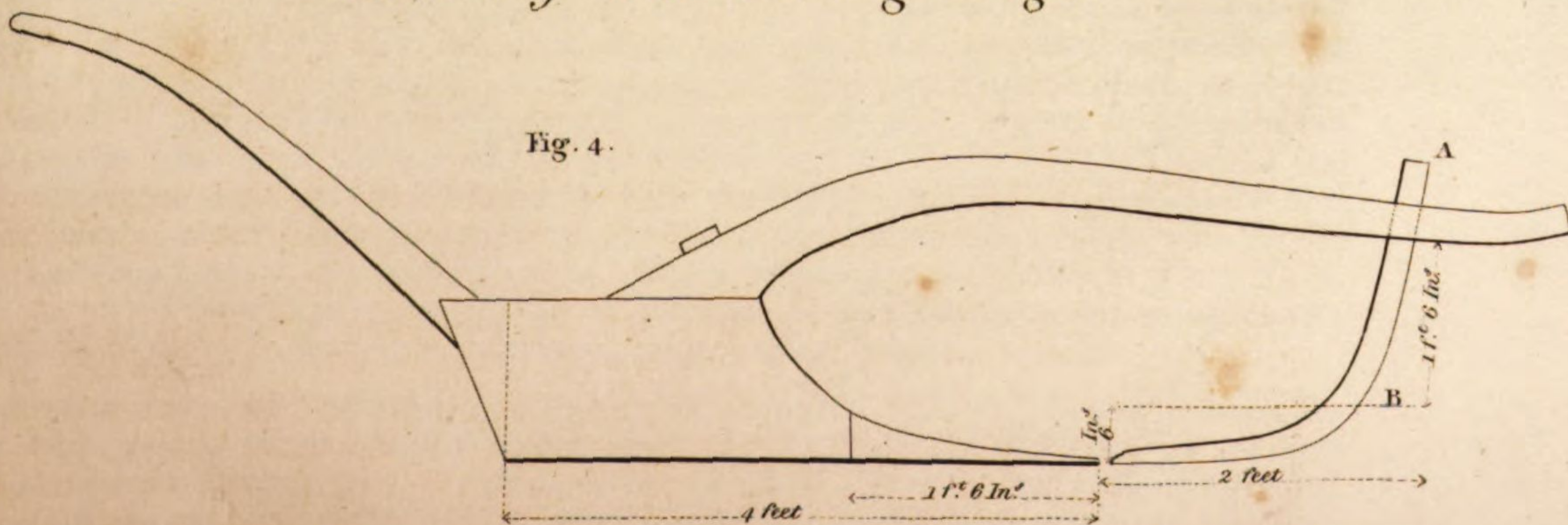


Fig. 3.

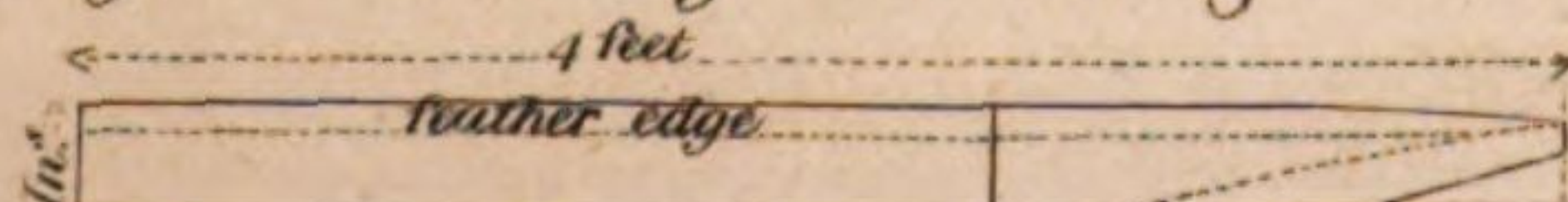


Side View of M^r Roscoe's Bog Plough.

Fig. 4.



Plan of the Sole of the Plough turned up.



of 70 pounds, which is equal to 20 stone of 14 pounds; and the highest price given for wheat at the time was £.2. 17s. for the same quantity. I have brought a sample of the wheat over with me, and I shall leave it at the Dublin Society House for inspection.

(5.)
EXTRACTS
from the Appendices to
preceding Reports.

Second Experiment:

Forty acres of bog were ploughed and sown with wheat in the month of March, in drills, and rape dust was laid on the bog with the seed, by an ingenious addition to the drilling machine. The crop was bad, which may be attributed partly to the time of sowing, and partly to deficiency of manure; besides rape dust is not a manure suited to a wet boggy soil. Something solid is required to compress the spongy texture of the moss; and perhaps calcareous clay marl has more immediate effect in compressing and decomposing a peat soil, than any other substance to be procured at a cheap rate.

Rep. IV.
Mr. Griffith, junior.

Third Experiment:

One hundred acres of red bog were ploughed and burned; turnip seed was afterwards sown in drills, and marl was laid on the drills at the same time, by the addition to the drilling machine already mentioned. This crop failed entirely, which was owing no doubt to the surface of the bog being too wet (for turnips do not succeed in wet ground) and to the very scanty portion of marl. The ashes from the burnt bog were white; and white peat ashes are composed of from 30 to 40 per cent. of sulphate of lime, and the remainder of siliceous and alluminous earths.

From experience in other places, Mr. Roscoe is of opinion that turnips cannot be expected to succeed on bog that has not been well drained, and has gone through a course of at least two crops. It is also necessary that the bog should be well marled and manured with dung. Red Bog treated in this manner, and sown with turnip seed, will not fail to produce an excellent crop. Mr. Roscoe thinks that common turnip is better than Swedish turnip for bog. He thinks also, that sheep should be folded on the turnip field. This mode of proceeding will have two excellent effects on the bog; first, the additional manure of the sheep's dung; and secondly, the treading the surface of the bog, and rendering its spongy texture more solid. Sheep do not become lame by treading on bog; it is probable that the astringent quality of bog-water may be useful to their feet.

Oats have been cultivated on Chat-moss, but did not succeed well; the crop ran too much to straw, and the grain did not fill.

Wheat has been sown on forty acres of Chat-moss this year, which has been marled at the rate of 150 tons per statute acre. The crop, when I saw it (in the month of January) looked extremely well and healthy, and I have no doubt there will be an excellent return.

Mr. Roscoe is forming a cast-iron railway from his marl pit to the interior of the bog; by this means he will be enabled to manure a great part of what has been drained this year; and I have no doubt, from the skill and ingenuity with which every thing is conducted by him, that his patriotic endeavours will be crowned with success. I say patriotic, for doubtless any man who gives up a great portion of his time and fortune to the reclamation of land, which has hitherto been deemed perfectly steril, merits that character, as well on account of the great extent of fruitful land, which (I might almost say) he has created, as from the very useful lesson he teaches other men who may be similarly circumstanced, and who have hitherto been afraid to venture on the improvement of a great bog.

Plough made use of by Mr. Roscoe at Chat-Moss:

The construction of this plough is different from most others; its chief peculiarity consists in the coulter, which is placed within one foot of the end of the beam. Its form may be seen by reference to Plate No. 1, fig. 4. From A to B, a length of one foot six inches; it is nearly perpendicular to the beam; at which point it is within six inches of the level of the sole of the Plough; from whence it forms a curve convex at the outside, till it nearly meets the point at the sock. The outer edge of the coulter is kept extremely sharp, so as to cut the surface of the bog; the sock, which is of the kind called the spear-sock, is one foot six inches in length, and is extremely sharp on both edges. Two wrought-iron plates, each four inches in breadth, are welded to the large or inner edge of the sock, and are so placed as to form a regular increase of width from the point of the sock to the heel of the Plough; the entire length is four feet, and the distance between the outside edges of the plates at the heel is fifteen inches; these Plates project both on the mould board, and straight sides of the Plough, one inch beyond the outward edges. These projections are shewn in Plate No. 1, fig. No. 5; which figure is a representation of the sole of the Plough turned upside down; the dotted lines point out the above-mentioned projections or wings.

The peculiar fitness of this Plough to boggy soil, consists, first, in the sharpness of the coulter, which makes an incision six inches deep into the bog, and also from its peculiar form, will raise the Plough over any obstacle it may meet. And secondly, the projecting wings, by cutting an inch into the sod on either side of the furrow, form a perfect separation of the sod turned up from the adjoining boggy soil. This is an object of considerable importance, and should always be attended to; for if the boggy fibres contained in the sod turned up, be not completely separated from the adjoining bog, it will be found that the uncut fibres will act as water-conductors from the neighbouring bog to the sod turned up;

and

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Griffith, junior.

and the natural consequence; where the connexion is not thus completely broken off, must be, that the ploughed surface of the bog will remain wet for a considerable time; but in those places where the separation from the adjoining bog is complete, the ploughed surface of the bog will become dry almost immediately.

Description of the Horse Patten :

The base of the Patten is formed of a deal board twelve inches long, eleven inches broad, and one inch thick; on each side of this board two plates of wrought iron A B and C D, three inches broad, and the twentieth part of an inch in thickness, are fastened down by rivets, which pass from the upper, through the board, to the lower plates. The distance between the plates A B and C D is two inches; the staples E and F are passed through the plate A B, and are rivetted in the lower plate. These staples are placed four inches asunder, and also four inches distant from each end of the plate A and B. Through the staples E and F, two links Q and R are passed, each three inches and a half long; G and H are iron fasteners, having an eye at one end and screw-hole at the other; K an iron heel-piece, having an eye at either end: it is fastened down to the centre of the plate C D by a bolt L, which is rivetted on the under side. M N and O P are iron straps, which pass through the links Q and R, and connect the heel-piece K with the fasteners G and H; the straps are made of hoop-iron, bent into the form represented in fig. No. 1; the ends are fastened together by the rivet S; T a screw, which, when the horse's hoof is placed between the straps, is passed through the screw-holes in the fasteners, and when screwed home, prevents the hoof from moving at the front part of the Patten. U V is a horse-shoe, in the construction of which there is nothing particular, excepting the projections W and X; when the horse's hoof is contained in the Patten, the heel is fastened down by these projections, which pass under and in contact with the straps M and N and O P close to the heel-piece. Fig. No. 1, Plate 2, is a perspective view of the Patten and Shoe, in which the hoof has been omitted, to give an inside view of the straps and fasteners. Fig. 2 is a side view of the Patten, with the horse's hoof fastened in. Fig. 3 is a plan of the Patten, with the straps open to receive the hoof.

The weight of the Patten above described is nine pounds; it is certainly much heavier than is requisite. I think the wooden board which forms the base might be much thinner, and the iron plates might also be made lighter and less broad.

It is probable, that if a base were made of a single sheet of wrought iron, of a tenth of an inch in thickness, or perhaps of the eighth part of an inch, with a thin iron frame round the edges to prevent its bending, it would answer the purpose equally well, and be much lighter than Mr. Roscoe's Patten.

I do not think that Mr. Roscoe's mode of fastening the horse's foot into the Patten can be much improved; besides, its being simple, and not liable to get out of order, is a recommendation that should not be over-looked. To those who have not seen horses ploughing with Pattens of the dimensions above described, it may appear almost incredible that they should move freely, and without injuring their legs; but it is nevertheless true, that by practice the horses used by Mr. Roscoe in ploughing on Chat-Moss, have not only become accustomed to walk with their legs sufficiently apart, so as that the Pattens may not strike each other, but that they proceed, when the bog is not very wet, at a pace fully equal to that of horses ploughing on clay lands. When the bog is tolerably dry, the quantity which is usually ploughed at Chat-Moss, by a pair of horses, is one statute or English acre per day; but where any obstacles occur, or where the bog is particularly wet, a pair of horses will not get through more than half that quantity.

I have brought over with me (as a model) a Horse Patten that has been much used; I shall leave it at the Dublin Society House, that gentlemen may have an opportunity of seeing it.

Some trials have been made in Ireland to put Pattens on bullocks instead of horses, for ploughing on bog. The Dean of Kildare made some improvements with bullocks, at Belle-grove, in the Queen's County, but he has not yet brought them to perfection; the base of the Patten which he used was entirely of wood, and was fastened on the foot by leather straps.

It is to be expected that bullocks should succeed in ploughing on bog better than horses, as they will submit to accidents, and overcome obstacles with more temper.

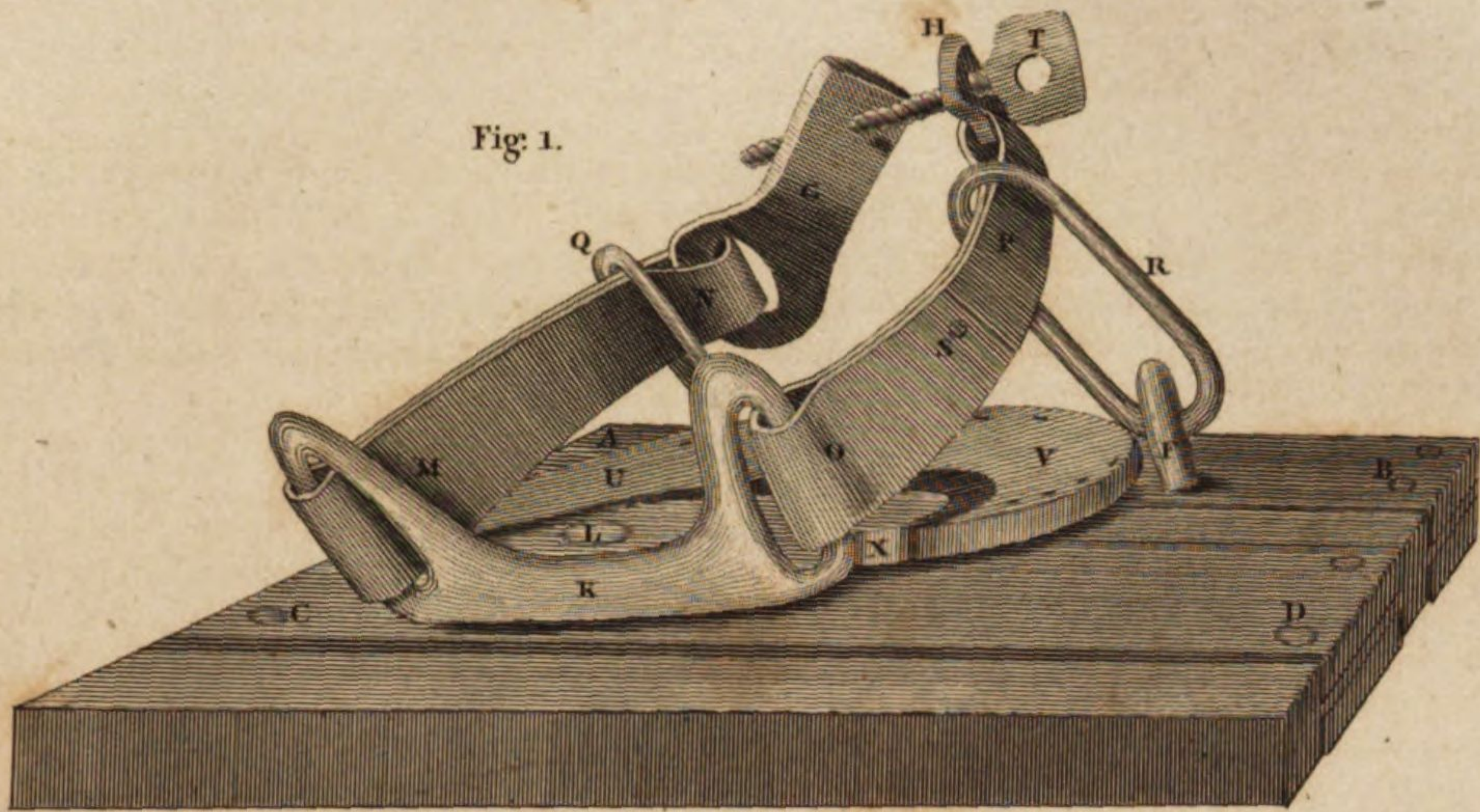
I have the honour to be, Gentlemen,

Your most obedient humble Servant,

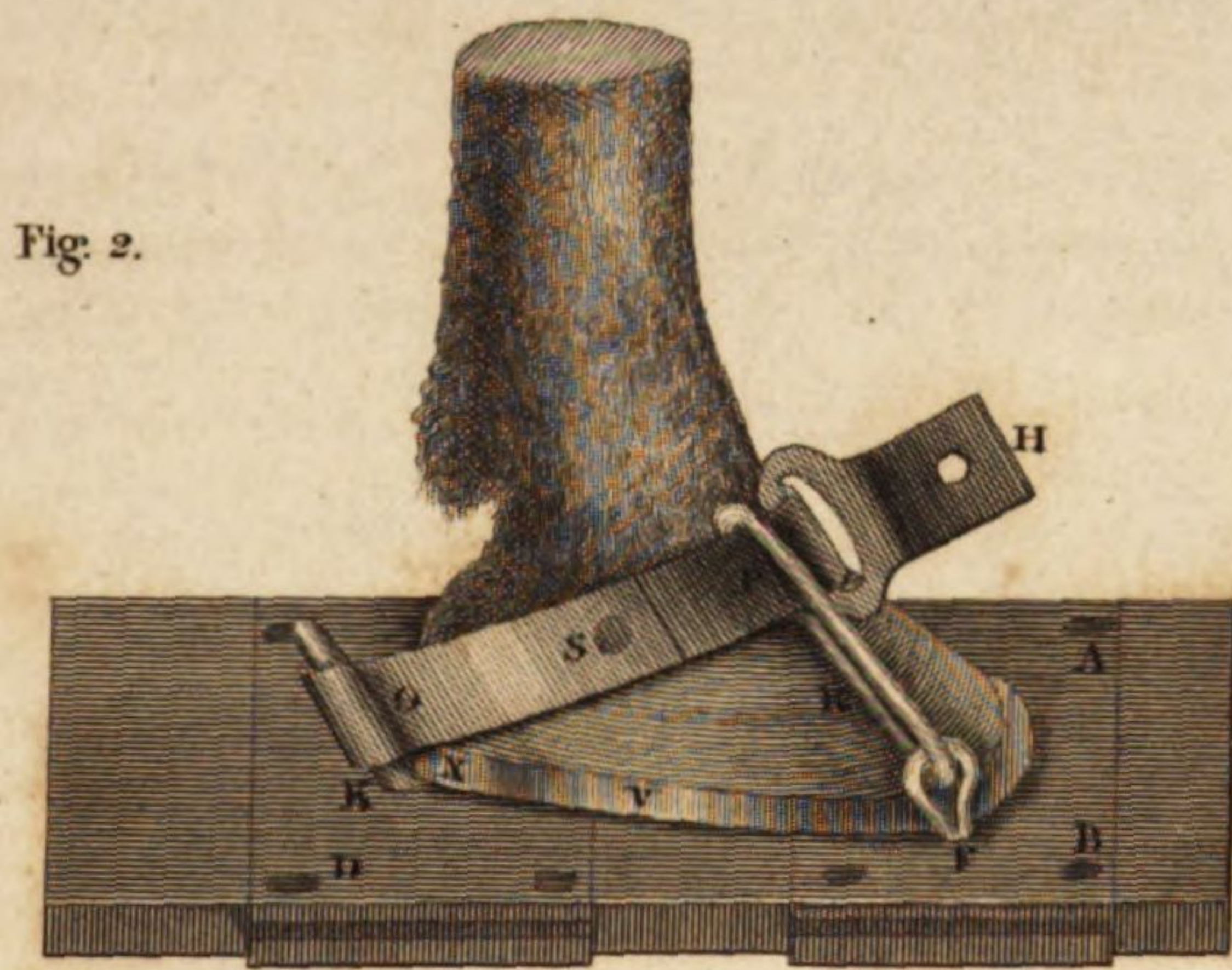
Dublin, March 1812.

Richard Griffith, junior.

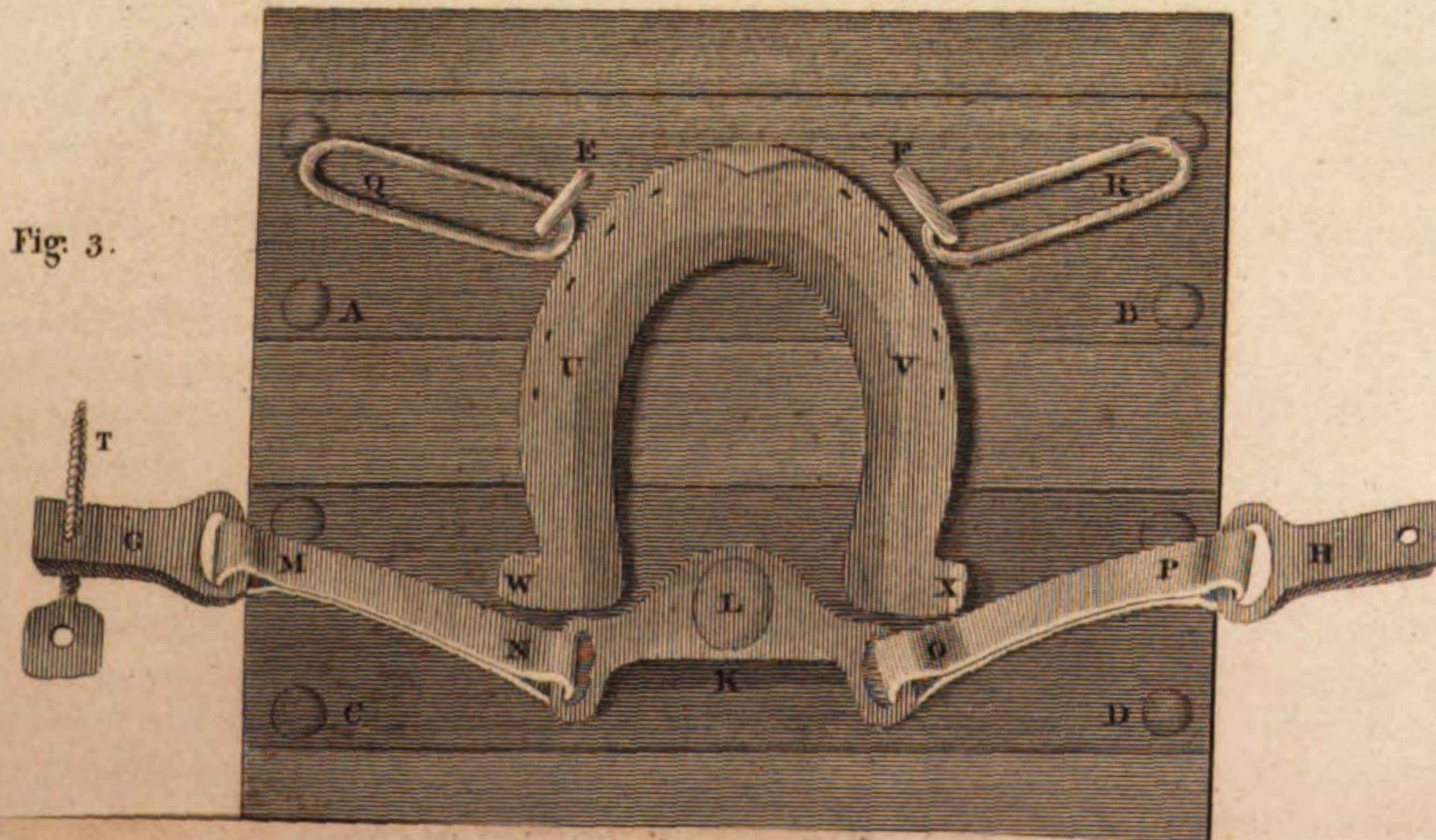
Perspective View of M^r Roscoe's Horse Patten.



Side View of the Horse Patten.



Plan of the Patten with the Straps open to receive the Hoof.



Commencing again at Carlow, the boundary of the limestone valley passes four miles to the south of Athy, from whence it again ramifies into the county of Tipperary, forming a valley, almost twelve miles wide, between the coal district and the Slieve Bloom mountains. From Mountmellick the limestone boundary may be traced to the west by Ballybog, Dunkerrin, and having crossed Lough Derg by Woodfort and Toberdony to Galway Bay, from whence, turning northwards, the boundary line passes through Lough Corril and Lough Mesk, to Castlebar.

This great limestone valley, which includes one-fourth part of Ireland, contains above seven hundred thousand acres of Red Bog, the whole of which is improveable; for in every instance in the immediate neighbourhood of the Bogs, the best possible manure, viz. limestone gravel, is found. This is a fact of very great importance, and should never be forgotten by those who, at a future period, may take into consideration the general improvement of the Bogs of Ireland.

It is singular that the boundaries of the great limestone valley, as above described, should so nearly coincide with the boundaries you have given, in your First Report to Parliament, of the great belt which crosses Ireland from east to west, and which, according to your statement, contains six-sevenths of the Bogs of this country*.

In the foregoing pages I have given a geological outline of the baronies of Erris, Tyrawley, and Burrishoole, in the county of Mayo, and Tyreragh in the county of Sligo. The descriptions are for the most part very general; but I had neither time nor opportunity of making any very particular observations; my object in putting it forth is merely to give some idea of the geology of a country, which, in its present state, is nearly inaccessible, and which has never before been visited by any geologist.

The mountainous district of Erris and Tyrawley contains altogether about 295,000 Irish, or 477,850 English acres, of which about 94,000 Irish, or 152,260 Irish acres, are in a state of cultivation, or covered with sand; 96,000 Irish, or 155,500 English acres, are nearly unproductive mountain; and 105,000 Irish, or 170,090 English acres, are unprofitable red Bog.

In considering what may be the specific difference between the deep lowland Bogs, contained in the great limestone valley of Ireland, already described, and that usually met with in mountainous districts, we are naturally led to the consideration of first causes. Probable origin of the Bogs.

Most authors who have lately written on the subject of peat moss, have agreed, that this substance will only vegetate at a low temperature, and where water is present. Admitting this to be the fact, all Bogs must necessarily have had the same origin; that is, wherever they have grown, temperature must have been at a low degree, and water, more or less abundant, must have been present: but Bogs are found in situations so very dissimilar, that we are next led to the consideration of the causes which equally induced the growth of the substance on the summit of a mountain, and on the surface of a country moderately elevated above the sea.

It is now generally known, that nearly the whole of the surface of the great limestone valley of Ireland is covered by a stratum, of various thickness, of limestone gravel; and that all the Bogs contained therein are surrounded by steep ridges of hills, formed of this substance, which prevent the immediate discharge of the waters into the nearest river. I mentioned this circumstance in the first Report which I had the honour of laying before you; and it has been corroborated by the Reports of all the Engineers that have been employed in levelling and surveying the Bogs, both on the east and west sides of the river Shannon.

These gravel ridges, which were probably formed by eddies at the time of the general flood, created an interruption in the currents of the waters, and thereby caused the formation of vast shallow lakes between the ridges of limestone gravel: in the stagnant lakes, mosses and other aquatic plants vegetated; for in the climate of Ireland, the temperature of stagnant water, at the level of the sea, is sufficiently low to induce the growth of moss during nine months in the year.

The growth of aquatics on elevated land, in this country, is rarely interrupted; the temperature is at all times low, and the slowness of evaporation, which is the consequence of a low temperature, leaves sufficient moisture, even on the sides of mountains, to induce the growth of moss in such situations; but the quantity of stagnant moisture in those places is trifling, when compared with the supposed shallow lakes which originally caused the growth of lowland Bogs.

It may be observed, that the depths of mountain and lowland Bogs are very different; the former rarely exceeds six feet, whilst the average of the latter amounts to twenty, and is sometimes more than forty feet in depth. This may at first sight appear extraordinary; for if my argument be correct, it is certain that the shallow Bog must have commenced its growth immediately subsequent to the formation of the mountains, and that the growth of the deep or lowland Bogs was commenced at a much later period; but it should be recollected, that moss will grow in some situations much more quickly than in others; and there

(5.)
EXTRACTS
from the Appendices to
preceding Reports.

Rep. IV.
Mr. Griffith.

* The belt is contained between a line drawn from Wicklow head to Galway, and another from Howth to

Sligo. See First Report of Commissioners for improvement of Bogs, &c. page 4.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

REP. IV.
Mr. Griffith.

have been instances (one of which I have mentioned in my Report on the district of the River Suck) of the growth of moss in lowland Bog amounting to two inches in a year for twenty years. This rapid growth of moss may perhaps be attributed to the great abundance of stagnant water which is always present in the lowland Bogs, excepting in the hottest of the summer months.

Mountain Bog is much denser than lowland moss; this is the natural consequence of the difference in the rapidity of the growth of each.

REP. IV.—Mr. Nimmo on the Bogs of Galway, West of Lough Corrib; various modes of culture, with comparison of expense.

Mr. NIMMO on the Bogs of Galway, West of Lough Corrib.

Of the Cultivation of Bog.

I am perfectly convinced, from all that I have seen, that any species of Bog is by tillage and manure capable of being converted into soil, fit for the support of plants of every description; and with due management, perhaps the most fertile that can be submitted to the operations of the farmer.

Green crops, such as rape, cabbages, and turnips, &c. may be raised with the greatest success on firm bog, with no other manure than the ashes of the same soil. Permanent meadows may be formed on Bog, more productive than on any other soil. Timber may be raised, especially firs, larch, spruce, and all the aquatics on deep Bog, and the plantations are fenced at little expense; and with a due application of manure, every description of white crops may be raised upon Bog; and I know no soil from which they can be extracted without it.

There is this advantage in the cultivation of Bog, that any species of soil will act as a manure to it, even the siliceous sand of Renvill having that effect; but this admixture of foreign soil, though highly beneficial, is not essential to the improvement of Bog; fallowing and manure, such as dung or lime, will convert the Bog-stuff itself into a soil, and extract large crops from it; so that there is nothing desperate in the cultivation of Bog upon the basis of a rock.

Bog-stuff is also of great value as a manure, either by mixing it in compost with kelp, lime, or dung, or by soaking it with putrid or salt water, or even rain or river water, provided its texture is well broken. In the limestone counties round Lough Corrib, the lower part of the Bog-stuff or "moreen," as it is called, is much used as manure, after being some time exposed to air and moisture. Turf ashes are also well known as a valuable manure, either on firm Bog or clayey upland.

The first operation necessary in the cultivation of Bogs, is drainage. It should be so managed, as to have also the effect of inclosing; and in most cases it may be made to facilitate the formation of roads and small canals, on the application of water.

Where the bogs have much inequality of surface, the position of drains and inclosures will be regulated by circumstances; care must always be taken to cut off the upper and foreign water, by a catch-drain under the banks, ere it spread on any part of the level bog and to have an appropriate channel for carrying off the water from every hollow on the surface.

Bog-stuff being impermeable to water, cannot be drained through the under strata.

In the greater level bogs, I would still recommend a subdivision into square compartments of ten acres each, by ditches or drains 6 feet wide at top, and 4 or 5 feet deep. Then small cross-drains or furrows, at 7 or 8 perches asunder, parallel to that side which has least fall, of 1 foot wide and a foot or more in depth, giving them a fall in the bottom, if there be none in ground.

The drains must be allowed, especially in wet bogs, to run for a year or two ere any thing farther be attempted; they must be annually scoured, and preserved of their proper depth.

If dung is to be had, the best system is undoubtedly to plant potatoes, either in beds or drills; the furrows running down the fall, will complete the drainage, and the manipulations of the potatoe-crop hasten the formation of the soil; or instead of potatoes, a crop of turnips, carrots or greens, may be taken.

A slight addition of dung gives a second crop of potatoes, for which, if the former was in beds, the furrows must now be changed to complete the formation of the soil.

The trenches being then levelled, so as not to bury the improved soil, the land is sown with a white crop, as oats, rye, wheat, &c. laid down with grass seeds; and when in grass, a top-dressing of lime, gravel, earth or sand applied. After 3 or 4 years meadow and pasture, it is again broken up, and the second rotation of crops will greatly exceed the first in value.

Estimate of the Outlay and Return of the First Rotation for the system of Potatoes and Manure on a Ten Acre Field.

(5.)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo,

	£.	s.	d.	£.	s.	d.
80 perches boundary drain, at 1 s. - - -	4	—	—			
160 perches cross drains, at 1½ d. - - -	1	—	—			
Trenching and forming ridges, 5 l. per acre - -	50	—	—			
Twenty tons dung or sea-weed, per acre 5 s. - -	50	—	—			
Seed 2 l. per acre - - - - -	20	—	—			
Planting, earthing, digging, &c. 5 l. - - -	50	—	—			
Total Outlay - - £.	175	—	—			
Return, 7 tons, or 1,120 stones potatoes, per acre at 3 d. - - -				140	—	—
Second Year Potatoes again.						
Ten tons dung, per acre - - - - -	25	—	—			
Seed and labour - - - - -	70	—	—			
Outlay - - £.	95	—	—			
Return, 1,500 stones potatoes, per acre at 3 d. - - -				182	10	—
Third Year, White Crop (Oats) with Grass seeds.						
Seed oats, per acre, 1 guinea - - - - -	11	7	6			
50 lbs. of clover and rye, grass seed, &c. per ditto - -	25	—	—			
Hoeing, harrowing, rolling, &c. 3 l. 10 s. per acre - -	35	—	—			
Reaping, &c. paid by straw.						
Outlay - - £.	71	7	6			
Return, 200 stone of oats, per acre, at 1 s. - - -				100	—	—
4th year, meadows, at 5 l. per acre - - - - -				50	—	—
5th ditto, second year - - - - -				50	—	—
Total Return on White Crop, &c. - - - - -				200	—	—
Total Outlay and Return for these 5 years - - -	341	7	6	522	10	—
Top-dressing of lime, coral, gravel, &c. which suppose to cost 10 l. per acre - - - - -	100	—	—			
Gained in 5 years - - £.	441	7	6			
	81	2	6			
£.	522	10	—			

Which is more than 8 per cent. on the capital employed; suppose 200 l.

The land now in pasture will let at 30 s. or upwards per acre per annum.

Where dung is scanty, and earthy limestone gravel to be had, as is the case with so many of the Bogs in Connaught and Leinster, a top-dressing of that substance should be applied as early as possible in the process; if that is not to be had, then clay burnt, if possible; if none of that, then any gravel, earth, rotten rock or sand. This will greatly change the vegetation on the bog, and render it good pasture, without much manipulation. If accompanied with a dressing of half half-slacked quick-lime and of red ashes, the value will be much greater, and the preceding rotation of crops may be taken without much farther manuring.

But the great original outlay, and the difficulty of transporting these substances over the bog, are serious obstacles to this system, especially in a country where capital is not abundant. The means of facilitating it is the proper business of the Engineer.

Where the foreign soil can be applied, as the alluvion of rivers and streams, it is the cheapest of all.

The next best is a water-carriage over the whole surface. I have shewn that this is practicable in bogs of any slope, but is particularly adapted to level bogs.

A partial water-carriage will be of service when the distance is great; level canals being run into the bog from the gravel pits, and the stuff spread out on the bog by wheelbarrows, waggons, &c.

The different modes of land carriage require no comment.

(5)
EXTRACTS
from the Appendixes to
preceding Reports.

Rep. IV.
Mr. Nimmo.

By none of these methods is it likely that a dressing of an inch in depth can be applied under about 8*l.* per acre, unless the bog be firm, and very near the gravel. A dressing of 100 barrels of lime would cost 5*l.* or upwards, so that the capital or original outlay in this system may be considered as at least one-half greater than in the former. The returns and ultimate profit will be much the same.

When this system is adopted, I would therefore recommend it to be combined with an extensive cultivation of rape or turnip on the rest of the bog; and this to be manured with the ashes of the turf, cut away for facilitating the water-carriage.

This, as observed by Mr. Griffith, is a cheap method of rendering bog productive; but instead of pasturing it with sheep, I would advise it to be given to soil cattle in the house, or in folds, as the manure produced thereby will be of great service in extending the cultivation.

An acre of rape or turnip will be at least worth 10*l.* for green food; the expense may be as follows:

	£.	s.	d.
Draining, per acre - - - - -	—	10	—
Ploughing, &c. - - - - -	1	—	—
Digging up, burning, and spreading ashes - - - - -	2	10	—
Seed 2 <i>s.</i> 6 <i>d.</i> harrowing or rolling, &c. - - - - -	1	—	—
Cutting and carrying home, or attending sheep, if fed off - - - - -	1	10	—
	£. 6	10	—

If the Bog cannot be ploughed, the expense of digging with spades, and ridging, will cost about £. 4, but the rape or turnip crop will still cover it.

The only other system I shall now notice is, that of fallowing and liming. It seems best adapted to those parts of Jar Connaught, &c. which are destitute of manure, and where the sub-soil is rock.

In this mode, which has been followed in Scotland with some success, the surface drains are first made, and allowed to run for two or three years, when the Bog becomes sufficiently firm to bear horses in summer; it is then to be ploughed up, and exposed to the winter frosts and rains: this being repeated several times, so as to pulverize the soil, it is formed into broad level ridges, dressed with lime, ploughed for the seed in autumn, and sown in spring with oats. A second crop of oats is sometimes taken, and the land laid down in grass. After three or four years, break it up again for oats on the lea; potatoes or turnips, with dung; barley, with grass seeds, hay, &c.

I should by no means recommend those crops of oats, without any manure but lime, which are so frequently taken in Scotland. The first crop seldom gives more than the seed; a green crop is certainly far preferable upon Bog at the commencement, and at all events, a dressing of ashes may be given for the first crop, as it will give a good return, and compensate for the outlay.

Perhaps it may be as well to sow grass seeds at once, after fallowing and liming, which will soon bring it into good sheep pasture, and after some time, it may bear heavy cattle.

The Expense and Return of this system, may be as follows;

	£.	s.	d.
1st Year, drainage per acre - - - - -	—	10	—
3d - - ploughing - - - - -	1	—	—
5th - - three ploughings and harrowings - - - - -	3	—	—
40 Barrels Lime, - - at 2 <i>s.</i> 6 <i>d.</i> - - - - -	5	—	—
6th - - Oats seeds and labour - - - - -	4	10	—
7th - - Ditto, with grass seeds - ditto - - - - -	7	—	—
	£. 21	—	—

Return of First Rotation:

	£.	s.	d.
6th Year, 10 barrels Oats, at 14 <i>s.</i> - - - - -	7	—	—
7th - - 12 barrels - ditto - - - - -	8	8	—
8th,—9th Two years Hay - - - - -	6	—	—
10th,—11th Two years pasture - - - - -	2	—	—
	£. 23	8	—

Profit on First Rotation - - - £. 1. 12*s.*

2d Rotation:

	£.	s.	d.
12th Year, Oats on the lea, seed, and labour - - - - -	4	10	—
13th - - Turnips or potatoes, with manure - - - - -	10	—	—
14th - - Oats, with seeds - - - - -	7	—	—
	£. 21	10	—

Index.

- 2. Disease and Condition of Poor in Ireland.** 1819. 1829.—Reports from Committee on the State of Disease and Condition of Poor in Ireland; dated June 7, 1819. (409.) - - - - - Sess. Vol. VIII. p. 457
And June 19, 1829. (347.) - - - - - Sess. Vol. IV. p. 451

N. B.—The *Figures* refer to the Page of the Report, Evidence or Appendix.

Acts of Parliament. General observations on the effects of existing Acts of Parliament, relative to the bogs in Ireland, *App.* 214-218—Plan for an Act of Parliament to oblige owners of bogs to ascertain their boundaries, *App.* 239.

Adamson, Mr. Surface drains carried on under his direction, *App.* 142.

Aghaboe Bog. Part thereof improved, and capable of much greater improvement, *App.* 205.

Agriculture. Opinions relative to the agricultural reclamation of drained bogs, *App.* 133-141.—See also *Roads.*

Aher, Mr. Observations by him on the bogs between Roscrea and Killenaul, *App.* 195-203—Observations by him on bogs in Queen's County, *App.* 203-208.

Alder. The common alder flourishes in boggy and marshy districts in Ireland, *App.* 223.

Allen, Bog of. Extent thereof, 122—Proposed estimate of expense of draining the bogs under this name, 124—Dimensions and number of drains proposed for reclaiming this bog, *App.* 162, 163.

Ashes. See *Red Ashes.* *Turf Ashes.* *White Ashes.* *Yellow Ashes.*

B.

Badd, Mr. His observations on the bogs in Mayo, *App.* 213, 214.

Bantry Bay. Extensive cod and ling fishery in Bantry Bay, 110.

Bark. Not always changed into peat, *App.* 197.

Barrow River. Number of English acres of bog land in the district of the river Barrow, *App.* 126—Quantity of bog land on a small district on the banks of the river Barrow, *App.* 144.

Belview Bog. Plantations on this bog are of considerable extent, *App.* 242.

Belaghstown. Nature of the improvements of bog land carried on at this place, and under whose direction, *App.* 157.

626.—V.

A

Birch,

2.—Reports, 1819 & 1829—continued.

Birch, Messrs. Extent of bog land cultivated by them, *App.* 145.

Black Bog. Has a strong resemblance to pitch, or pitch coal, *App.* 164—Manures best suited to the reclamation of black bog, *App.* 168.

Blue Clay. Tenacious or blue clay forms the immediate substratum of the bogs, and is an excellent manure for red bog, *App.* 167.

Bogs. Extent of bogs to be drained in Kerry, 101—Good effects from the publication of Reports on bogs, 106, 107—Division thereof into districts, 122—Nature and structure of bogs in Ireland not very dissimilar in their composition from the fens of Lincolnshire, 123—Description of the different kinds of bog found in Ireland, *App.* 164, 165. 170. 195. 213—Well treated, amply repay the cost of improvement, *App.* 185.

See also *Acts of Parliament*. *Aghaboe Bog*. *Aher*, Mr. *Allen Bog*. *Badd*, Mr. *Barrow River*. *Belview Bog*. *Black Bog*. *Boyne River*. *Brassington*, Mr. *Brusna River*. *Chicory*. *Colborne*, Mr. *Cultivation of Bogs*. *Drainage of Bogs*. *Griffith*, Mr. *Horse Labour*. *Jones*, Mr. *Nimmo*, Mr. *Reclaiming Bogs*. *Red Bog*. *Townsend*, Mr. *Wet Bogs*.

Boundaries. See *Acts of Parliament*.

Bounties. By whom bounties on fisheries in Scotland are paid, and how drawn for, 111.

Boyne River. Number of English acres of bog land in the district of the River Boyne, *App.* 126.

Brassington, Mr. His observations on bogs between Kildare, Athy, and Monasterevan, *App.* 210, 211.

Brick-dust. Opinion that brick-dust is a powerful solvent for peat, *App.* 157.

Bridges. Bog bridges stand well, *App.* 194.

Brusna River. Extent of bog land in the district of the River Brusna, *App.* 126.

Buck Wheat. Value thereof for feeding horses, *App.* 221—Very little known in Ireland, *App.* 221.

C.

Caithness. See *Fisheries*.

Caledonian Canal. See *Fisheries*.

Canals. Drains and rivers may be converted into navigable canals; and purposes to which they may be applied, *App.* 201.

Capital. Great want of capital in Kerry, 101.

Carriages. Description to be used on railways, *App.* 183.

Cattle. See *Chicory*.

Caustic Lime. Best suited for the improvement of bog land, *App.* 165.

Chainmen. See *Wages*.

Charleville, Lord. Description of trees grown on bog land drained by him, *App.* 142.

Chat Moss. Report on the bog improvements at Chat Moss, in Lancashire, *App.* 253-256.

Chicory. Cultivation thereof recommended on reclaimed bogs for the food of cattle, *App.* 221.

Clare District. Quantity of bog land in the western extremity of the county of Clare, *App.* 144.

Clay. Universally found beneath bog land, *App.* 157.

Clonfert Bog. Unpromising appearance and extent of the bog, *App.* 243.

Cod Fishery. See *Bantry Bay*.

Colborne, Mr. Observations on the bogs in the west of the county of Clare, and general observation with respect to drains there, *App.* 208, 209.

Corn. Quality of wheat grown on deep red bog land, *App.* 168.

Crops. Crops best suited to cultivation of bog land, *App.* 168. 205.

Cultivation of Bogs. Opinion as to the practicability of cultivating bogs when once drained, *App.* 125—Various modes of culture, with comparison of expense, *App.* 250-253.

D.

Davy, Sir *Humphrey*. His opinion relative to the agricultural reclamation of drained bog, *App.* 133—Letter from him to the secretary of the commissioners, on the nature of bogs, &c. *App.* 191, 192.

Dillon,

Dillon, Lord. Particulars of the improvements made on his estates in Ireland, *App.* 144, 145.

Drainage Act. General Drainage Act recommended, 106.

Drainage of Bogs. Opinion as to the practicability of draining bogs in Ireland, 125—Particulars of the plans laid before the Commissioners relative thereto, *App.* 127-133—Plan for opening drains, *App.* 163. 170. 204—Good effects arising therefrom, *App.* 170—Instances of the inefficiency of mere draining, *App.* 181—Deep drains should be cut through the summit of bogs, *App.* 199—Different description of drains necessary for bog lands, *App.* 199, 200—Method of cutting drains, *App.* 200—Bogs may be drained too much for the purposes of vegetation, *App.* 200—The falls for drainage of bogs in Queen's County are considerable, *App.* 203.
See also *Holland*.

Dutch. Scheme of improving bogs as proposed by them, *App.* 185.

E.

Edgeworth, Mr. His observations on the district surrounding Edgeworth-town, *App.* 179-186—His observations on bogs east of the Shannon, *App.* 239.

Elm Trees. Elm trees seldom found in the bog, *App.* 197.

Engineers. Salary of engineers employed under Parliamentary Commission for the improvement of bogs in Ireland, 123.

Esculents. Many are known to thrive well on boggy earth, *App.* 222.

F.

Fens. Short account of the drainage of the fens in England, 107-109.

Ferns. Species of the fern tribe to be found growing in bogs, *App.* 220.

Ferries. New roads have annihilated all the ferries, 113.

Fiorin Grass. Uncultivated mountains of county of Wicklow peculiarly adapted to its production, *App.* 247, 248.

Fir. Roots of fir trees occupy more space than those of the other trees found in bogs, *App.* 197.

Fish. Description of fish found off the coast of Wexford and Waterford, 115.

Fisheries:

Ireland.—Fisheries of Ireland discouraged, and reason thereof, 102—Districts of sea coast where fisheries might be carried on in Ireland, 103—Description of fish off the coast of Galway, 104—Advantages to fisheries from having depôts for salt erected on convenient parts of the coast, 111—Opinion that there are very valuable fishing grounds on the coast of Ireland, 115—Suggestions for encouraging the fisheries and improving the sea coast of Ireland, 116—Fisheries on the Irish coast would admit of considerable improvement, 104—Causes to which the decline of the boat fishery of Ireland may be attributed, 116—Opinion the fisheries of Ireland might be carried on much more extensively than at present, 116.

Scotland.—Whether from opening the lines of communication to the coast any advantages have resulted to the fisheries of Scotland, 111—Caithness fishery has gradually improved of late years, 112—Benefits derived by the fisheries from opening the Caledonian Canal, 112—Export of fisheries in Scotland very great, 113.

See also *Bounties*.

Fishery Laws. Evils of the present fishery laws, 110.

Fishing Villages. Advantageous to establish fishing villages, 110—Situations most advantageous for fishing villages, 111.

Flax. Small patches of flax are frequently to be seen cultivated on the edges of bogs, *App.* 222.

Foin Seed. The cultivation of this description of seed should be encouraged on reclaimed bog, *App.* 221.

Fraser, Robert. (Analysis of his Evidence.)—Extensive cod and ling fishery in Bantry Bay; evils of the present fishery laws; considerable quantity of fish off the Bay of Wexford; advantageous to establish fishing villages, 110—Situations most advantageous for fishing villages; by whom bounties on fisheries in Scotland are paid, and how drawn for; advantageous to fisheries from having depôts for salt erected in convenient parts of the coast; opening the roads to the coast of Scotland has been attended with great advantage to the markets there, 111.

[Second Examination.]—Opinion that there are very valuable fishing grounds on the coast of Ireland; description of fish found off the coast of Wexford and Waterford, 115
626.—V.

2.—Reports, 1819 & 1829—continued.

Fraser, Robert. (Analysis of his Evidence)—continued.

—Irish wherries well adapted for carrying on the fishery; opinion the fisheries of Ireland might be carried on much more extensively than at present; causes to which the decline of the boat fishery of Ireland may be attributed; suggestions for encouraging the fisheries, and improving the sea coast of Ireland, 116.

Fuel. Opinion that the draining of bogs would cause a deficiency in the quantity of fuel attainable in Ireland, *App.* 125.

G.

Galway. See *Fisheries*.

Grasses. Opinion of Professor Wade, that good meadow and pasture grasses may be cultivated on reclaimed bog, *App.* 220.

Griffith, Mr. Richard, jun. His observations on the bogs in Galway and Roscommon, near Athlone, *App.* 240–244—On the mountains of Dublin and Wicklow, *App.* 246—On the baronies of Trawley and Tyreragh, *App.* 248. 250.

Gypsum. Found in considerable quantities in the north of Ireland, *App.* 166.

H.

Hemp. Has been tried on bog land with various success, *App.* 168—Can be raised on boggy grounds judiciously prepared, *App.* 222.

Highlands. Proportion the Highlands bear to the entire contents of Scotland, 103.

Holland. Particulars respecting the drainages of Holland, 106, 107.

Holmes, Mr. Plantation of firs made by him on parts of bogs adjoining his estates, *App.* 142.

Hodson, Mr. His mode of reclaiming bog, *App.* 244.

Hodson's Bay. Improvements commenced in 1797, on a small scale, and regularly enlarged every year since, *App.* 243.

Horse Labour. Horse labour can be very little used in bogs, 106.

Horse Patten. Description thereof, *App.* 256.

I.

Improvements. Sum granted by Government for improvements in Scotland, 113—Ireland has been improved to a much greater degree than the fisheries, 114.

Inny and Lough Ree. Extent of bog land in the district of Inny and Lough Ree, *App.* 126.

Iveragh District. Quantity of bog land on the district of Iveragh, forming the southwestern extremity of the county of Kerry, *App.* 146.

J.

Jones, Mr. His observations on the district of Lough Corrib, and successful method pursued at the bog of Monivae, *App.* 211, 212.

K.

Kenmare River. Extent of bog land in the district of the river Kenmare, in the county of Kerry, *App.* 146.

Kerry. See *Bogs. Capital.*

Kildare, Bishop of. Letter from him describing his improvements in Belaghstown bog, *App.* 157, 158—Improvement made by him, *App.* 182.

Killenaule District. See *Roscrea and Killenaule.*

King's County. Bogs in this district easily reclaimed, *App.* 170.—See also *Reclaiming Bogs.*

Labourers. Labourers in the habit of travelling great distances in search of employment, 103.—See also *Wages.*

L.

Land. Quantity of uncultivated land in Ireland, 103—Low lands of Ireland would be equally valuable with the upland if sufficient drainage executed, 124.

Larch. May be grown on shallow black bog lands, *App.* 141.

Laune River. Quantity of bog land in this district, *App.* 146.

Lichens. Different descriptions thereof to be met with in bogs, *App.* 219.

Lime.

Lime. Valuable as manure for unreclaimed bog land, *App.* 157—Process of discovering whether lime be or be not caustic, *App.* 165.

See also *Caustic Lime.* *Mild Lime.*

Limestone. Limestone more abundant in Ireland than Scotland, 103—Of what composed, *App.* 165, 166.

See also *Magnesian Limestone.*

Limestone Gravel. Great quantities to be found in the North of Ireland, and different descriptions thereof, *App.* 166.

Ling Fishery. See *Bantry Bay.*

Longfield, Mr. His observations on the bogs to the south of the Grand Canal between Tullamore and Shannon harbour, *App.* 171-176.

Lough Corrib District. Quantity of bog land on this district, *App.* 144.

Lough Garra. Quantity of bog land in this district; situate in Roscommon, Sligo and Mayo, *App.* 144.

Lough Ree. See *Inny and Lough Ree.*

Lucern. Its qualities; and soil on which it can be cultivated, *App.* 221.

M.

Machinery. Description of different sorts of machinery used in draining and cultivating bogs, *App.* 187—Description of a machine for taking sections of a river, *App.* 187.

Magnesian Limestone. Opinion of Professor Davy as to its qualities as a manure for bog land, *App.* 166.

Manures. Description of those best suited for reclaiming bogs, *App.* 201—In Queen's County, *App.* 205.

See also *Black Bog.* *Blue Clay.* *Lime.* *Red Ashes.* *Turf Ashes.* *White Ashes.* *Yellow Ashes.*

Maryborough District. Quantity of bog land in this district, *App.* 144.

Mayo County. Quantity of bog land on three large districts in the county of Mayo, *App.* 144.

Meath. Bogs in this district easily reclaimed, *App.* 170.

Mild Lime. Has no decomposing qualities when used as a manure, *App.* 165.

Mosses. Different description found in bog land, *App.* 219—Dried moss retains its vegetative power for a long period, *App.* 197.

Mountainous Districts. Proportion mountain tracts bear to the whole of Ireland, 103—Whether the improvement of mountainous districts would be likely to afford a permanent source of employment, 106.

N.

Nimmo, Alexander. (Analysis of his Evidence.)—Low rate of wages in the neighbourhood of Limerick; Tralee mail-coach road will only employ the people of that district; great want of capital in Kerry; extent of bogs to be drained, 101—Want of roads to the harbours of Ireland renders them of no avail; fisheries discouraged, and reason thereof; public works in Scotland carried on at the expense of Government, 102—Limestone more abundant in Ireland than Scotland; population of the sea-coast very great; labourers in the habit of travelling great distances in search of employment; proportion the Highlands bear to the entire contents of Scotland, 103.

Proportion mountain tracts bear to the whole of Ireland; quantity of uncultivated land in Ireland; districts of sea-coast where fisheries might be carried on in Ireland, 103—Description of fishery off the coast of Galway, 104—Fisheries on the Irish coast would admit of considerable improvement, 104—Opinion that the construction of roads in Ireland would cause an improvement in agriculture; horse labour can be very little used in bogs; whether the improvement of mountainous districts would be likely to afford a permanent source of employment; general drainage Act recommended, 106—Good effects from the publication of reports on bogs; particulars respecting the drainages of Holland, 106, 107—Short account of the drainage of the fens in England, 107-109.

Nimmo, Mr. His observations on the bogs of Iveragh, in the county of Kerry, *App.* 223-236—On the bogs of Galway west of Lough Corrib, *App.* 250-253.

O.

Oak. Oak sometimes found scattered near the verge of the bogs, *App.* 197.

Oats. Recommended as the second crop for reclaimed bog land, *App.* 158.

Osier. The cultivation of the osier has been found to be very profitable on low lands, *App.* 222.

2.—Reports, 1819 & 1829—continued.

P.

Parliamentary Commission. Nature and extent of works performed under the Parliamentary Commission, 111, 112.

Peat. The ashes of peat dug from the bottom of bogs has been found very efficacious in altering the properties of pure peat, *App.* 157—Extracts from Mr. Nasmith's essay on the properties and use of peat, *App.* 168.

See also *Bark. Brickdust.*

Peat Bogs. Description thereof, 123, 124.

Piers. Whether the erection of small and cheap piers in different parts of the coast would not greatly improve the interior of Scotland, 113.

Population. Population of the sea-coast in Ireland very great, 103.

Public Works. Public works in Scotland carried on at the expense of Government, 102.

Q.

Quagmires. Description thereof, *App.* 164—Usually occupy the most elevated situations of bogs, *App.* 164—Suggestions for the improvements thereof, *App.* 168.

Queen's County. Description of proposed drains to be used in this county, *App.* 203, 204.
See also *Manures. Reclaiming Bogs.*

R.

Railroads. Wooden railways would be very useful in reclaiming bog land, *App.* 169, 183
—Calculation of expense for the formation of portable wooden railways, *App.* 188–190
—Navigable drains not so advantageous as portable railways, *App.* 207.
See also *Carriages.*

Rape. Recommended as the first crop of reclaimed bog land, *App.* 158.

Reclaiming Bogs. Description of the process used in reclaiming bog lands, *App.* 157, 158, 201, 202—Expense thereof, so as to render it worth a certain sum per acre, *App.* 169
—Peculiarly suited to Irish husbandry, *App.* 185—Instances of occupier of upland adjoining the bog reclaiming some part of the bog edge, and reason why discontinued, *App.* 201—Estimate of expenses of improving an acre of Irish bog with potatoes after draining, *App.* 202—Progress made in reclaiming bogs in Queen's County, *App.* 205
—No experiments of any consequence made in the reclaiming and improving of bog in the neighbourhood of Kildare and King's County, *App.* 210.

Red Ashes. Qualities thereof as manure, *App.* 167.

Red Bog. The most predominant species of bog land in Ireland, and of what composed, *App.* 164.
See also *Blue Clay.*

Red Clover. Capable of being cultivated with advantage on heavy and dry descriptions of land, *App.* 221.

Rine, Bog of. Causes of the convulsion in the bog of Rine, *App.* 180, 181.

Roads. Opening the roads to the coast of Scotland has been attended with great advantage to the markets there, 111—System adopted in Scotland for keeping roads in repair, &c. there, 114, 115—Expense per mile for making roads in mountainous districts, 114—Tralee mail-coach road will only employ the people of that district, 101—Want of roads to the harbours of Ireland render them of no avail, 102—Opinion that the construction of roads in Ireland would cause an improvement in agriculture, 106.

Roscrea and Killenaul District. Quantity of bog land in this district, *App.* 144.

S.

Salaries. See *Engineers.*

Salt. See *Fisheries.*

Scotch Fir. Scotch firs grow better than any other trees in red bog, *App.* 141—The bark of the Scotch fir is used in tanning leather, *App.* 223.

Seton Plough. Particulars thereof, *App.* 190, 191.

Shannon, River. Extent of bog land in the district of the Shannon, *App.* 126.

Smith, Mr. Nature of the improvements made by him on bog land, *App.* 145.

Soils. What clayey soils produce moss and rushes, and if left undisturbed will increase rapidly, *App.* 199.

Staffmen. See *Wages.*

Surveys. Advantages to Ireland from the mere survey of the bogs there, *App.* 186.

Tanning.

T.

Tanning. See *Scotch Fir*.

Telford, Thomas. (Analysis of his Evidence.)—Whether from opening the lines of communication to the coast any advantages have resulted to the fisheries of Scotland, 111—Nature and extent of works performed under the Parliamentary commission, 111, 112—Caithness fishery has improved of late years; benefits derived by the fisheries from opening the Caledonian Canal; opinion that fisheries could not have been extended but by the application of capital; number of persons employed in the Caledonian Canal, 112—Sum granted by Government for improvements in Scotland; whether the erection of small and cheap piers in different parts of the coast would not greatly improve the interior of the country; export of fisheries very great; new roads have annihilated all the ferries, 113—Country has been improved to a much greater degree than the fisheries; expense per mile for making roads in mountainous districts; system adopted in Scotland for keeping roads in repair, &c, there, 114—Examination relative to the expense of keeping roads in repair, 115.

Timahoe, Bog of. Part of the water from this bog discharged into the sea at Drogheda, and the other part below Waterford, 124.

Timber. Comparative growth of timber on bog and upland, *App.* 242.

Tomoronco, Bog. Growth of trees on bog; merely drained, without clay, gravel or manure, *App.* 243.

Townsend, Mr. Observations made by him relative to the bogs to the north of the Grand Canal between Tullamore and the Shannon, *App.* 176-179—His observations on the bogs in Tyrone, Armagh, &c, *App.* 214-218.

Trees. On firm black bog trees grow as well as on upland, *App.* 203.

Turf. Dried turf cannot be brought to its original state, *App.* 200.

Turf Ashes. Valuable qualities thereof, *App.* 205.

Turf Banks. Very subject to break down, and cause thereof, *App.* 163. 207—Description thereof, *App.* 195.

U.

Uncultivated Lands. See *Land*.

V.

Valleys. Grass valleys may be found by the side of bogs, *App.* 201.

Vetches. Value thereof as artificial food for cattle, *App.* 221.

W.

Wade, Professor. Memoir of Professor Wade on the vegetable matter of bogs, *App.* 218-223.

Wages. Low rate of wages in the neighbourhood of Limerick, 101—Wages paid by commissioners for drainage of bogs in Ireland: To chainmen, *App.* 122—To labourers, *App.* 122—To staffmen, *App.* 122.

Waterford. See *Fish*.

Westmeath. Bogs in this district easily reclaimed, *App.* 170.

Wet Bogs. Practicability of draining them doubted, and answers thereto, *App.* 163.

Wexford. Considerable quantity of fish off the Bay of Wexford, 110.

Wherries. Irish wherries well adapted for carrying on the fishery, 116.

White Ashes. Are of little or no value as a manure, *App.* 167.

Windmills. May be used for the purpose of raising water, *App.* 188.

Woodlawn. Nature of the bog improvements at Woodlawn, *App.* 240-242.

Y.

Yellow Ashes. Much esteemed as a manure for bog and upland, *App.* 167.

THE HISTORY OF THE

ROYAL SOCIETY OF LONDON

AND OF THE
FELLOWSHIP OF THE
ROYAL SOCIETY OF LONDON
IN THE
REIGN OF
CHARLES II.

EMPLOYMENT OF THE FELLOWSHIP OF THE ROYAL SOCIETY OF LONDON

IN THE
REIGN OF
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R E P O R T

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FROM THE

SELECT COMMITTEE

ON THE

EMPLOYMENT OF THE POOR

IN IRELAND.

*Ordered, by The House of Commons, to be Printed,
16 July 1823.*

245

R E P O R T

R E P O R T

THE REPORT - - - - - p. 3

MINUTES OF EVIDENCE - - - - - p. 13.

APPENDIX - - - - - p 200.

EMPLOYMENT OF THE POOR

IN IRELAND.

Ordered, by The House of Commons, to be printed,

10. A. 1833.

R E P O R T.

THE SELECT COMMITTEE appointed to inquire into the Condition of the **LABOURING POOR**, in that part of the United Kingdom called **IRELAND**, with a view to facilitate the application of the Funds of private Individuals and Associations, for their Employment in useful and productive Labour, and to report their Observations and Opinion thereupon to The House; and who were empowered to report the **MINUTES** of the **EVIDENCE** taken before them;—**HAVE**, pursuant to the Order of The House, inquired into the Matter to them referred; and have agreed upon the following **REPORT**:

IN executing the duties imposed upon them by the order of The House, Your Committee have adverted to the course followed by a Committee, appointed in 1819, for the purpose of considering the same subject, and have directed their attention to the state of the labouring Classes in Ireland, and the means of employing those classes in useful and productive labour. Following the example of the Committee of 1819, they have not felt that they have exceeded the limits of their duty, in inquiring into the efforts already made to promote the employment of the Peasantry, in examining various suggestions for the improvement of the condition of the people, and in considering the impediments which check and restrain the development of industry in Ireland. These inquiries have been facilitated, in consequence of the events of the last year; during that period, a pressure of distress, wholly unexampled, was felt in Ireland, which directed the attention of His Majesty's government, of Parliament, and of the British Public, to the condition of the Irish Peasantry, and which led to the appropriation of large sums, voted by the legislature, and subscribed by individuals, for the purpose of mitigating, if not of averting, that famine and disease, which had extended to so alarming a degree in many districts in Ireland. The expenditure of the large sums placed at the disposal of Government and of charitable societies, necessarily produced a close investigation into the condition of the people of Ireland, the causes of their distress, and the best means of relieving them; and as the result of these inquiries furnishes important information upon the subject more immediately before Your Committee, they have felt it their duty to refer to the papers laid before Parliament during the present session, respecting the appropriation of the public grants, and to examine the individuals connected with the principal charitable association, for the relief of distress in Ireland. In taking this course, the object of Your Committee has been, to obtain information from those individuals, who were best qualified to judge of the nature and the extent, and the causes of the calamity, which, during the year 1820, afflicted a considerable portion of the inhabitants of Ireland.

In the early part of the month of May 1822, a public meeting was held in the city of London, for the purpose of raising subscriptions for the relief of the distress in Ireland. A committee of gentlemen was appointed for the purpose of distributing the sums subscribed, and carrying

REPORT FROM THE SELECT COMMITTEE ON

on correspondence. About the same period, considerable grants were made by Parliament, and disposed of in like manner by the government of Ireland. The Districts in which the distress was found to be most urgent, were the following:

	Population.	Acreble Contents.
Cork - - - -	702,000	1,048,800
Kerry - - - -	205,000	647,650
Limerick - - -	214,000	386,750
Galway - - - -	286,000	989,950
Mayo - - - -	297,000	790,600
Sligo - - - -	127,000	247,150
Leitrim - - - -	105,000	255,950
Roscommon - -	207,000	346,650
Clare - - - -	209,000	476,200
Tipperary (part) -	353,000	554,950
Cork city - - -	100,000	—
Limerick city - -	66,000	—
Galway town - -	26,000	—
	<u>2,907,000</u>	<u>5,544,650</u>

Clare popula-
tion - - 209,395
No receiving
relief - - 116,115

It would thus appear, that the distressed districts were equal in extent to one-half of the superficial contents of all Ireland; and although Your Committee have not sufficient means of judging what were the actual numbers of people receiving relief, yet if the returns made by Mr. Killally, the engineer employed by Government, with respect to the county of Clare, be accurate, and that the numbers stated by that gentleman be assumed as the basis of calculation, it would appear that considerably more than one-half of the entire population of the distressed districts depended upon charitable assistance for their support. The sums distributed through the city of London committee amounted to nearly 300,000*l.* and furnished means in co-operation with Government to continue the necessary relief till the month of August; and it is worthy of observation, that the cessation of remittances was not the act of the committee in London, but was called for and recommended by their correspondents in Ireland, who in many instances held back unexpended, and at the disposal of the donors, considerable sums, the necessity of distributing which seemed to them to have ceased. It is satisfactory to think that the sums so liberally contributed appear to have been granted on rational principles, and to have been fairly and justly appropriated by the individuals and associations in Ireland, to whose discretion they were confided. It is also satisfactory to find that the most lively feelings of gratitude seem to have been excited by this benevolent interposition, which it is to be hoped will tend to unite the two parts of the empire by the strong ties of sympathy and obligation.

The nature of the late distress in Ireland was peculiar. In the districts to which Your Committee have already adverted, the potatoe crop, which furnishes the general food of the Peasantry, had failed; but there was no want of food of another description for the support of human life. On the contrary, the crops of grain had been far from deficient, and the prices of corn and of oatmeal were very moderate. The export of grain from ports within the distressed districts of Ireland, was considerable, during the entire period from May to August, infinitely exceeding the imports during that period; and those districts in the south and west presented the remarkable example

example of possessing a surplus of food, whilst the inhabitants were suffering from actual want. The meritorious patience of the Peasantry under the pressure of want, is here not undeserving of attention and of praise. The calamity of 1822 may therefore be said to have proceeded less from the want of food itself, than from the want of adequate means of purchasing it; or in other words from the want of profitable employment. In some districts, as at Clonekelty (Cork), where the potatoe crop failed, but where some part of the population was employed in manufacturing industry, no individual engaged in the linen trade is said to have had occasion to receive relief. This peculiarity in the character of the late distress in Ireland appears to Your Committee to have arisen from the entire dependence of the Peasantry upon the food raised by themselves. When the produce of the peasant's potatoe ground fails, they are unaccustomed to have recourse to markets, and indeed they seem rarely to have the means of purchasing. The potatoe crop is also very variable and uncertain; nor can the surplus of one harvest be reserved to supply any deficiency in a subsequent year. From the weight and bulk of potatoes there are great difficulties in the way of transport, and these difficulties produce great disproportion between the prices in one district and those in a district immediately adjoining.

The individuals employed by Government to execute the task confided to them, seem to have proceeded upon just principles, and with a wise caution. Feeling the innumerable objections incidental to any system of gratuitous relief, the government engineers, the local associations, and the London committee, endeavoured to make labour the medium through which alone their assistance was to be given; and where from less correct views this resolution was deviated from, the most immediate ill consequences appear to have ensued. Your Committee cannot too strongly state their approbation of this principle; relief purely gratuitous can seldom in any case be given without considerable risk and inconvenience; but in Ireland, where it is more peculiarly important to discourage habits of pauperism and of indolence, and where it is the obvious policy to excite an independent spirit of industry, and to induce the Peasantry to rely upon themselves and their own exertions for their support, it is obvious that gratuitous relief can never be given without leading to most mischievous consequences. Any system of relief therefore, however benevolently intended, which leads the Peasantry to depend upon the interposition of others rather than upon their own labour, cannot but repress all those exertions of industry which are essentially necessary to the improvement of the condition of the labouring classes.

Your Committee have the satisfaction to think, that the relief given in 1822 was not only effectual for its object, but wisely and economically administered; and in confirmation of their opinion they need only refer to the report of Mr. Killally, from whence it appears, that in the county of Clare, "26,845 persons, most of them unfitted, from age or disease, to procure by labour the means of existence, were supported at an expense of not quite one penny each per diem."

The condition of the Peasantry of those districts of Ireland to which the evidence refers, appears to Your Committee to be wretched and calamitous to the greatest degree. An intelligent Scotch agriculturist, who visited Ireland during the last year, alleges, "that a large portion of the Peasantry live in a state of misery of which he could have formed no conception, not imagining that any human beings could exist in such wretchedness. Their cabins scarcely contain an article that can be called furniture; in some families there are no such things as bedclothes, the peasants showed

Mr. Hyett.

Rt. Hon. D. Browne.

Rt. Hon. M. Fitzgerald

Rt. Hon. Sir J. Newport.

Rt. Hon. M. Fitzgerald.

“ some fern, and a quantity of straw thrown over it, upon which they slept
 “ in their working clothes, yet, whenever they had a meal of potatoes they
 “ were cheerful; the greater part he understood to drink nothing but
 “ water.” This statement appears confirmed by the testimony of many
 of the witnesses examined before Your Committee, who agree not only in
 this melancholy description of the condition of a considerable portion of
 the Irish peasantry, but agree also in attributing it to the total want of
 employment in which they are left. In some parts of the country one
 half of the entire population are stated to be without employment, in others
 the proportion is said to be still greater; and all the witnesses examined
 agree in attributing, to a considerable degree, the turbulent spirit of the
 peasantry and their excesses to this cause. At Clonakilty, in the county
 of Cork, where the linen manufacture has been introduced, tranquillity is
 stated to have prevailed. The county of Mayo, where yarn and linens to a
 considerable extent are manufactured, the public peace has not been en-
 dangered. One barony in the county of Kerry has been uniformly the
 least disturbed, and in that barony alone has manufacturing industry been
 carried to any extent. In the neighbourhood of Waterford “ no shade of
 “ disturbance has existed, the peasantry having a steady market for their
 “ labour, whilst in parts of Cork, where the people are to a considerable
 “ degree unemployed, the most dangerous combinations against the laws,
 “ and the most violent attacks upon property have lately taken place;”
 and yet in those very districts Your Committee have been informed on
 the authority of a civil engineer of eminence, “ that he very soon pacified
 “ the country by an extended employment of the people in opening a new
 “ line of road;” the member who gave this information adding from
 himself, “ that if employment could be made sufficiently extensive, he
 “ doubted not that the turbulent habits of the population would be
 “ abandoned.” When, in addition to these expressions of opinion, the
 improved condition and tranquillity of the north of Ireland, where the
 linen manufacture prevails, is contrasted with the wretchedness of the
 south, Your Committee cannot refuse admitting the immediate connection
 existing between employment and peace, as well as between want of useful
 occupation and turbulence.

Rt. Hon. M. Fitzgerald.

It is the opinion of Your Committee, that there exists in the minds of
 the people a great anxiety for labour. The Peasantry of the south and
 west quit their homes at particular times of the year, in search of employ-
 ment. Mr. Nimmo, the civil engineer, when examined before the Com-
 mittee of 1819, stated, that many hundreds of the peasantry of Kerry,
 had willingly hired themselves as labourers in the neighbouring county of
 Limerick at four-pence a day; and a member of the Committee has stated,
 that he has known many of the peasantry of Kerry to quit their homes in
 search of employment, “ offering to work for the merest subsistence that
 “ could be obtained, at the lowest possible rate of wages, for two-pence a
 “ day, in short for any thing that would purchase food enough to keep
 “ them alive during the ensuing twenty-four hours.” When able to
 obtain labour by contract, or by task as it is called, the Peasantry are
 frequently known to overwork themselves, in a manner injurious to their
 health. The inhabitants of those peninsulas of the south-west of Ireland
 which are washed by the Atlantic, carry the sea ore and the calcareous
 sands of the coast many miles inland; and in some cases where the moun-
 tains are steep, and roads have not as yet been opened, these manures
 are carried two or three miles inland on the backs of the Peasantry. From
 these facts, Your Committee have every reason to conclude, that so far
 from being uniformly inactive and idle, the peasantry of Ireland have a
 considerable anxiety to procure employment.

Various

Various causes have been referred to, by the witnesses examined before Your Committee, as being sufficient to account for the want of employment in Ireland. Perhaps the nearest cause may be traced to the rapid increase of the population. In 1695, the population was calculated to be 1,034,102; in 1731, 2,010,221; in 1791, 4,200,000; in 1804, 5,400,000; and in 1821, nearly 7,000,000. The productions of industry have not increased in the same ratio, and the demand for labour has considerably diminished, if compared with the number of persons seeking for employment. Various causes of a local and temporary nature have contributed to increase the population, and to diminish the natural means of employing the people; these are adverted to in the Evidence. During the war, the high prices of corn and the effect of the free trade in corn, produced by the Act of 1806, gave a stimulus to the extension of arable husbandry. The corn exports of Ireland increased to an extent which has frequently been noticed in Parliament. During the same period, partly from political motives in adding to the number of freeholders, and partly from the ease with which high rents were paid for land, an extraordinary subdivision of farms took place. Many of the evils of Ireland, moral and political, as well as the depressed state of the Peasantry, may, in the judgment of Your Committee, be traced to the mischievous and frequently fraudulent multiplication of the elective franchise. This subject is highly deserving of the notice, if not of the interposition of the legislature. In an extensive district in the Queen's County, (the Barony of Portenahinch,) containing 1,187 farms, 1,029 appears not to exceed twenty acres in extent, and 540 are under five acres each. Since the depression of the prices of agricultural produce, the necessity of consolidating many small, into one greater farm, seems to be generally admitted and acted upon; and much of arable land has been laid down for the purpose of rearing and fattening cattle, as well as for dairy. That this alteration of system may ultimately be beneficial, and that it was actually necessary to prevent the indefinite subdivision of land, before in progress, may be admitted; but the first effect of the alteration has been to make a sudden change in the peasant's mode of life, depriving many of their former homes, and making it extremely difficult for them to obtain a new habitation. The districts to which this observation refers will be found by reference to the Evidence. Another cause of the diminution of employment arises from the effect of the fall of prices on the gentry of the country. The fixed payments to which many of the landholders of Ireland are subjected, partly from improvident habits, and partly from the peculiar system of managing land, by granting and taking leases for long terms in that country, are greater than can be found in any other part of the empire. These fixed payments, whether in the shape of head-rents, or interest on incumbrances, are, to a considerable extent remitted to England. The alteration of the value of money has made these fixed payments bear a greater proportion to the whole income of the country than they did during the war, and consequently, the balance remaining for the subsistence of the resident gentry has proportionably diminished. From this reduction of income a reduced employment of the people has necessarily proceeded. Labourers have been discharged, and the distress of the higher classes has reacted to a considerable extent upon the lower.

The want of capital seems to be generally referred to as the principal cause of the reduced means of employing the people; and this complaint of want of capital is generally accompanied by a statement, that capital might in Ireland be profitably invested. Assuming this position to be correct, Your Committee were naturally led to inquire into the causes which impeded the investment of British capital in Ireland, if that in-

vestment could take place with profit. All the witnesses examined imputed this difficulty of inducing British capitalists to invest their money in Ireland, to the disturbances which have unfortunately prevailed in that country, by which an impression has been to a considerable extent produced, that property is insecure in those districts where disturbances have prevailed.

The want of capital in Ireland is shown by the wretched description of implements, used both in domestic manufactures and in agriculture, as well as by the general deficiency even of such implements as the poverty of the people enables them to employ. The ploughs, carts, harrows, are generally of the rudest description, though, when improved models have been given, there has evinced an anxiety on the part of the farmers to profit by the experience and information of others, so far as was consistent with former habits and extreme poverty. The same want of capital has led to a payment of wages, not in money, but by allowances in Amount, always less satisfactory to the Peasantry, because it gives them a less immediate reward for their industry, and a less clear and intelligible mode of ascertaining that they are dealt with fairly. This system of paying wages in Amount is applied not only to the operation of field industry, when it results perhaps necessarily from the poverty of the people of Ireland, but it is stated to extend itself in some districts, to the execution of public works, by grand jury presentment. It appears from the report of Mr. Nimmo, "that the repairs of roads are carried on by a class of persons who make a trade of it, as a market for the labour of their poorer tenantry; the latter are not, properly speaking, paid for what work they do, but have the Amount of the presentment allowed by their landlords, as a set-off against the rent of their holdings." The observations of Mr. Nimmo, on the subject of the execution of grand jury presentments, are well deserving of the attention of the House; and it being admitted, that if the wages of labour were paid in money, the labour would be more cheaply purchased, and more cheerfully and efficiently given, Your Committee cannot but express a hope that a system of ready-money payment might be introduced, so far as the public works of the country are concerned. This system operates, no less as a discouragement to the reduction of rents, but as an increase to the amount of local burthens. The present amount of grand jury levies would, under a system of ready-money payments, give more extended employment, and effect objects of greater public utility; or if the amount of work to be performed remained the same, a reduction in the amount of the local burthens would necessarily take place.

Your Committee may be here allowed to remark, that it appears, that under the present system of grand jury laws, the demand for labour on the public roads generally occurs at the most inconvenient periods of the year, either during the spring work of the farmer, or during his early harvest, or turf season in summer. If measures could be adopted to distribute this work more judiciously, it would tend to equalize the demand for labour at different periods of the year, and to prevent the dangerous vicissitudes of an extended demand for labour, suddenly followed by a diminution of the means of employment.

Rt. Hon. Sir J.
Newport.

Mr. Boyce, in the
county of Wexford.

Respecting the effects which are likely to flow from the instruction of the Peasantry in agriculture, Your Committee refer, with great satisfaction, to the Evidence on the subject of a school of industry, established in the county of Wexford, by the exertions of a public spirited individual, who, in the experiment he has tried, and the example he has given, appears to have rendered a service to his country. Your Committee cannot doubt but

but that similar efforts made elsewhere would lead to the same beneficial results; and when the large sums annually voted, for charitable establishments and for schools in Ireland, are considered, Your Committee cannot but think that the instruction in Industry might be most advantageously to the Public, combined with the instruction of letters, and they doubt not that it would produce a diffusion of improved habits among the people.

Among the various suggestions which have been laid before Your Committee, one from Mr. Robert Owen, of Lanark, has attracted so much of public attention as to require particular notice. It has been so much canvassed in public, and has excited so much interest in Ireland, that Your Committee have felt it their duty to inquire minutely into its details, and consider the tendency of the principles on which it is founded. During the last year, Mr. Owen visited a very considerable part of Ireland, and at various places explained his plan, both by publication and at meetings of the most respectable description; and during the present session a petition, signed by many individuals of rank and consideration, has been presented to Parliament, praying that an experiment might be tried, on an enlarged scale, to ascertain how far the suggestions of Mr. Owen were applicable practically to the condition of the Irish people. The public spirit and benevolence of that gentleman, in thus devoting his time and intelligence to the amelioration of the people in a country with which he had no personal connection, is deserving of every praise; but his plan must be discussed with a view to the necessary consequences resulting from its adoption, and not from any consideration of his motives in laying it before the public. The principles of the plan are so well known, that it is unnecessary to do more than to refer to them in general terms; the details will be found in the Evidence subjoined to this Report. But when it is considered, that Mr. Owen's plan is founded upon a principle that a state of perfect equality can be produced, and can lead to beneficial consequences, Your Committee consider this position so irreconcilable with the nature and interests of mankind, and the experience of all ages, that it is impossible to treat this scheme as being practicable. Your Committee concur in the opinion "that a state in which an inequality of conditions offers the natural rewards of good conduct, and inspires widely and generally the hopes of rising and the fear of falling in society, is unquestionably the best calculated to develop the energies and faculties of man, and is the best suited to the exercise and improvement of human virtue. If Mr. Owen's establishments could be conducted according to his intentions, the idle and profligate would be placed in a situation equal to that which would be a reward to the industrious and virtuous." True it is, that Mr. Owen suggests, that under his new arrangements idleness and profligacy might be altogether extirpated from society; but such an opinion is one which appears altogether visionary. Certainly Your Committee feel every disposition highly to estimate the effects of good education and early moral habits, but to conceive that any "arrangement of circumstances" can altogether divest man of his passions and frailties, as they comprehend principles in themselves undeniable, is a result which can never be anticipated.

Your Committee will not deny, that the combination of individuals for mutual support, in establishments conducted rather on the principles adopted at New Lanark, than upon those now suggested by Mr. Owen, might improve the habits of the people in particular districts. An economical expenditure of food and fuel; the introduction of scientific improvements applicable to the interior of habitations; regular employment, and good education, are all important; but they must carefully be separated from the doctrine of community of goods and equality of profits. It does not appear to Your Committee that these causes of improvement

are in any respect exclusively connected with Mr. Owen's plan; they may flow from it so far as that plan comprehends those common principles on which all society is founded, and from whence all moral or intellectual advancement proceeds. With sincere respect therefore for the benevolence of Mr. Owen, Your Committee cannot do otherwise than dismiss his plan as impracticable, except so far as its mechanism tends to the improvement of public establishments, parish workhouses, and great schools for the education of the lower classes. In these respects it might perhaps be usefully tried by private individuals, though Your Committee have not considered it advisable to recommend it as a fit subject of legislative assistance.

Your Committee have considered with great pleasure, various efforts which have been made for the improvement in the condition of the people in different parts of Ireland. The detailed accounts of these experiments, tried with effect in the county of Roscommon, at Abington in the county of Limerick, and in the county of Tipperary, will be found in the Evidence; and Your Committee cannot but hope that these examples of perseverance and benevolence may be followed and attended with similar good effects in other parts of Ireland.

To the extension of the linen trade in the south, where it is now in its infancy, Your Committee cannot but look with the greatest solicitude. They concur in the opinion of the Committee on the Linen Trade, in considering it the duty of the linen board, by "every possible means to extend" this manufacture in the south and west, for wherever it has obtained "a footing, industry, moral habits, contentment and tranquillity have followed." This may in the south and west require some artificial encouragement, or rather, it may require a removal of those difficulties which poverty and ignorance produce, and which at present check its introduction and extension. The want of implements is peculiarly felt; the want of scutching-mills, and a defective system of preparing the flax, yarn and linen for the market. Aid might be given in all these respects to the people, not substituting public for private effort, but assisting and encouraging the latter, and making all public assistance strictly dependent upon local contributions. The good effect of Charitable Loans in Ireland, is strongly shown in the Evidence. These loans might be made applicable to the agriculture, the fisheries and the manufactures of the country, and would become instrumental, not only in providing the instruments of labour, but in diffusing better models throughout the distant parts of Ireland, and in promoting frugality and a punctual discharge of engagements. As loans must necessarily be locally administered through the resident gentry and clergy, they would also have the effect of creating or of augmenting the connection between the different classes of mankind, so essential to all the best interests of society.

The continued encouragement of the fisheries, the erection of piers and the formation of harbours, and the opening of mountain roads, are subjects of national interest; the beneficial consequences resulting from both are to be found minutely set forth in the Minutes. The example of the Highland Roads and Bridges is peculiarly applicable to Ireland, which will appear on reference to the Evidence given on a former occasion by Mr. Telford on this subject.

The attention of Government having been lately turned to the subject of emigration, Your Committee have been led to examine into the particulars of the experiment about to be tried. They cannot but express their approbation of the principles on which it has been conducted, and their

Session 1822.

Sessional Papers
1819. N° 409.
p. 111 to 115.

275

their hope that it may lead to satisfactory results. If it tends to the tranquillity of the country, it may lead to the introduction of British capital into Ireland; and it may also, in an extent much more confined, though more direct, promote some slight additional demand for labour in the parts of Ireland from whence the emigrants are taken. The attention of the Irish gentry may be advantageously called to this subject, and the evidence which has been given before Your Committee will be read with the greatest interest. The facility with which individuals may be assisted in obtaining establishments in the colonies, and the consequences to which it may lead, are both worthy of consideration.

Your Committee are aware, that according to many of the received principles of political science, all artificial encouragements to industry and production are difficult to be defended, and they are likewise disposed to admit the danger of public interference in Ireland, as tending to make the people of that country look to Government and to the legislature for relief, rather than to their own industry and their own exertions. But in the present state of part of that country, it may perhaps be questioned whether any increased application of capital is likely to take place, so as to give more active employment to the people, until peace and tranquillity are fully restored. If, as has been suggested, tranquillity can best be secured by encouraging industry among the people, it may perhaps be necessary that the first step towards the attainment of this object should be taken with the aid of the public, relying afterwards on the operation of natural causes. Your Committee would, however, strictly adhere to the principle of *aiding* local effort only. But wherever works can be undertaken, which on the fullest investigation are considered to be of real utility, and of such magnitude as to exceed the ordinary local resources; and where such security can be offered as to protect the public from eventual loss, Your Committee consider, that some assistance may wisely be given by the nation to stimulate private exertions.

The necessity of passing a general Drainage Bill has been stated in the Report of 1819; in this opinion Your Committee fully coincide, and trust that such a measure may be introduced into Parliament during the earliest part of the next session.

From the lateness of the period at which Your Committee were appointed, they have not been able to investigate the subject as fully as they could wish, but they trust they may be allowed to resume their labours early in the next session. They cannot, however, conclude without again expressing their opinion, that the employment of the people of Ireland, and the improvement of their moral condition, is essentially necessary to the peace and tranquillity of that Island as well as to the general interests of the United Kingdom.

16 July 1823,

WITNESSES.

<i>Mr. William Hyett</i>	- - - - -	p. 13
<i>Mr. Pierce Mahony</i>	- - - - -	21
<i>Mr. Robert Pauncefoote</i>	- - - - -	29
<i>The right hon. Dennis Browne, a Member</i>	- - - - -	45
<i>Mr. William Furlong</i>	- - - - -	53
<i>Mr. Thomas Oldham</i>	- - - - -	58
<i>Mr. James Connelley</i>	- - - - -	65
<i>Robert Owen, Esq.</i>	- - - - -	70. 156
<i>Sir John Newport, Bart. a Member</i>	- - - - -	103
<i>Robert Sterne Tighe, Esq.</i>	- - - - -	107
<i>Sir James Anderson Anderson, Bart.</i>	- - - - -	117
<i>Henry Grattan, Esq.</i>	- - - - -	125
<i>Mr. John Brackenridge</i>	- - - - -	131. 194
<i>Gerrard Callaghan, Esq.</i>	- - - - -	143. 185
<i>The right hon. Maurice Fitzgerald, Knight of Kerry, a Member of the Committee</i>	- - - - -	158. 188. 196
<i>James Roche, Esq.</i>	- - - - -	161
<i>Robert J. Wilmot Horton, Esq. a Member of the Committee</i>	- - - - -	168
<i>The right hon. the Countess of Glengall</i>	- - - - -	181

APPENDIX

200

1831 July 28

277

MINUTES OF EVIDENCE.

Lunæ, 23^o die Junii, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

*Mr. William Hyett, called in; and Examined.**Mr.
William Hyett.*

(23 June.)

WHERE do you reside?—In London.

Have you had occasion within the last year to pay attention to the present state of Ireland?—I have.

What were the circumstances that induced you to pay attention to the state of Ireland?—I went over on behalf of the Irish Relief Committee to inspect the state of the country, and also the distribution of the supplies that were sent over.

When did you go over?—I think the 20th of July 1822.

What part of the country did you visit?—I first went to Galway, from thence to Mayo, from Mayo to Sligo, Leitrim, Roscommon, Limerick, Cork, and Kerry.

How long did your residence in that country continue?—About six months altogether.

The counties that you have named were the counties which had been in a state of severe distress?—They were.

Did you communicate during your visit to Ireland with many of the leading gentlemen in the country?—I did with most of them.

And also with the peasantry themselves?—Constantly.

What were the objects that you chiefly kept in view in your tour in Ireland?—In the first place, to see whether the distress was so severe as had been represented, and, in the next place, to see that the supplies sent over were duly distributed and properly employed.

What supplies do you allude to?—The subscription money raised by the English nation in general.

You were furnished with letters of introduction to the leading persons throughout the country?—Yes, the first to the Archbishop of Tuam.

You found every possible facility in obtaining information from them?—Every, certainly.

Had you any difficulty in obtaining information with respect to the condition of the poor from the poor themselves?—Not the least, indeed their condition spoke for itself.

To what causes were you led to attribute the late distress in Ireland?—Perhaps to the scarcity of potatoes, the failure of the crop, the wetness of the season, which prevented the potatoes that had been stored being properly kept.

Was there any other cause which taken in itself, or in conjunction with the failure of the potatoe crop, contributed to distress the people?—The want of employment, I think, generally.

Did you visit the neighbourhood of Clonakilty in the county of Cork?—I did.

Was the distress at Clonakilty as great as in the immediate vicinity?—On the contrary, I saw no distress at Clonakilty; the people are employed in manufacturing linen, and it seemed to be a flourishing town.

Was there a failure of the potatoe crop in the immediate vicinity of Clonakilty?—Yes; but the people had means of employment.

Were you led to make similar observations with regard to the effect of employment in any other parts of the country?—Wherever employment could be had, people were in a better condition; but that was not generally the case.

Was there in point of fact a deficiency in the articles of food themselves, or a difficulty on the part of the peasantry in purchasing those articles of food?—A deficiency in the potatoe crop, but corn in very great abundance.

At low prices?—At very low prices.

Mr.
William Hyett.

(23 June.)

Were not the prices of potatoes high at one time?—Before the importation of potatoes into Ireland, they were high; but on the arrival of the vessels containing potatoes, the price lowered.

Can you give the Committee any information with regard to the produce of industry at Clonakilty; in what are people employed?—In the linen manufacture.

In what description of linen?—Coarse linen.

Suited to the foreign market?—Both the foreign market and home consumption. Do they manufacture that description of linen which is called platilla?—Very similar to it.

There is no difficulty felt at Clonakilty in procuring a vent for the articles produced?—None whatever; there are agents attend Clonakilty market from different linen buyers in London and elsewhere.

Are you aware whether the manufacture of linen in the town of Clonakilty has been of very late introduction, or is it ancient?—There was a description of linen manufacture at Clonakilty, and in the neighbourhood, called bundle cloth, but the width of it was objectionable. Since they have introduced a linen that resembles the platilla, they have been enabled to sell great abundance; and I suppose four or five years back may be the time they first began the manufacture of platilla.

By the manufacture of bundle cloth, the irregularity which you allude to led to loss of the market?—Yes.

Are you not aware that there has been a decline of demand produced in other parts of Ireland, from such irregularities prevailing in the market?—I have heard that that is the case.

Did you ever visit the town of Dingle?—I never was at Dingle. I have been at Tralee, which is in the neighbourhood of Dingle.

Are you acquainted with the steps taken by gentlemen in the neighbourhood of Clonakilty for the purpose of establishing that market?—There has been a linen hall built, for the sale of linen, by the proprietor of the town, who is Lord Shannon. I believe it has wanted no other encouragement from the gentlemen in the neighbourhood.

Have there not been very considerable efforts made on the part of an officer of the Linen Board to instruct the people of the county in manufacturing the description of linen best suited for the market?—Certainly; his name is Franks; a very intelligent man, who has caused the regulations of the Linen Board to be carried into effect, and the effect produced by that has been a better sort of manufacture.

In the other parts of the country which you visited, and in which the coarse linens have not been produced with success, have the regulations of the Linen Board been carried into effect?—No; on the contrary, they have not been attended to.

Have you any doubt that a strict attention to the directions of the linen laws is essential to the production of an article suited for public sale?—Essential in the highest degree.

What information did you receive in Ireland with respect to the failure of the linen trade in the neighbourhood of Dingle?—From their inattention to the linen regulations, from their making this bundle-cloth, the width of which was unsuitable to the present markets.

Had you any communication with the buyers of linen in the south of Ireland?—I had, with Mr. Besnard, who purchases very largely.

Have you reason to imagine, from this conversation, that there would be any difficulty in procuring a market for the coarser description of linens, if produced to a greater extent, in the south of Ireland?—If made according to the patterns furnished by the linen buyers, I believe it could be sold to a very great extent; but the difficulty has been, in many cases, to induce the people to forego the manufacture of the inferior article, and to make this that has been recommended by the linen buyers.

Have peasantry, when in communication with you, expressed an anxiety for employment?—Every where.

Do you mean that observation to apply generally to all the counties which you visited?—The anxiety to obtain employment has been universal, even at very low wages, and at any description of labour that can be supplied.

Confining the question to the manufacture of coarse linens, what are the obstacles which you conceive at present to stand in the way of a more general employment of the people in Ireland?—The difficulty in the first place of obtaining flax, which has not been grown in sufficient quantities; I see no other difficulty.

Supposing the flax produced in greater abundance, is there any obstacle which has

has come within your observation as to the subsequent manufacture of the article?—None at all.

Are you aware of any obstacle in the way of the cultivation of flax?—None in the least; the flax grown in Ireland is particularly good.

Have you heard any complaint on the part of the peasantry, of any circumstances which prevent their sowing as much flax as they otherwise would sow?—None; there is a great anxiety in the peasantry in general, to obtain flax seed to sow.

Are you aware of any offers made by the Linen Board, during the last year, to facilitate the growth of flax?—There have been.

What were the conditions under which the flax seed was given?—It was distributed, I believe, in small quantities.

Under what conditions?—That the landlord gave the ground rent free, and the clergyman should forego to press the tithe; that he abandoned his right to tithe.

Was there a very great anxiety on the part of the peasantry to obtain possession of the flax-seed on those conditions?—Every where.

Are you aware of the extent of land which is generally appropriated by the Irish cottager peasant for the growth of flax?—In general as large as he can obtain seed to sow; he always provides ground sufficient for the seed that he can obtain.

Is the quantity of land that each peasant has under flax, large?—It depends on the quantity of ground that each peasant has.

The question refers to a cottager-peasant of Ireland?—The usual practice is to grow it on the edges of the bog.

Do you consider the quantity grown by each peasant to be large or small?—Small; because he has the smallest quantity of ground, and he is not always in a condition to obtain seed.

Supposing the growth of flax increased, is there any other difficulty in the way of preparing that flax for the use of the manufacturers; what is the next process?—The next process is steeping.

What is the next beyond that?—The scutch-mills have been but lately established, they are given by the Linen Board for a sum of money, I think 100 l.; given by the Linen Board to certain proprietors who wished to have scutch-mills erected.

Are those scutch-mills numerous in the south?—By no means.

Do you conceive that they are sufficiently numerous for the necessity of the poorer manufacturers?—They are not; in the county of Mayo, I believe, there is but a single scutch-mill.

If the flax be not prepared by the scutch-mill, how is it prepared?—In a very imperfect manner; it is prepared by the cottager, by drying it before the fire, and breaking and cleaning it by hand.

Is that not a process which is attended with loss, both in time and by reason of the imperfect execution in details?—Very much so.

Have you any doubt but that the more extensive erection of scutch-mills in Ireland would produce an enlarged occupation of the people?—Yes, it would; it would be most beneficial.

Have you visited any of the scutch-mills which are lately erected in the south?—Yes, I have.

Have you any doubt as to the good consequences which have attended their erection?—They have answered the purpose, evidently.

Can you inform the Committee whether there is an anxiety on the part of the peasantry to have their flax scutched at those mills?—The scutch-mills, I should mention, have been but lately introduced; but where they have been introduced for any length of time, the people are anxious to have them scutched by the mill instead of the other way.

Passing to the next process of the manufacture, are there any difficulties which stand in the way of the spinning of flax?—The next, I believe, is hackling; hackles are furnished by the Linen Board, and I believe in increased quantities lately.

Do you think that there is any deficiency in the south and west of Ireland which you have visited, in the number of hacklers, or in the implements of their trade?—In the implements there is a deficiency.

Have you found the deficiency matter of complaint in more cases than one?—In a great many cases.

In the different counties which you visited?—In the different counties.

Can you inform the Committee how flax, either in its raw or in its hackled state, is sold in Ireland?—I am not acquainted with the price.

Mr.
William Hyett.

(23 June.)

Have you ever attended any of the fairs or markets where flax is sold?—The market at Limerick, and at Clonakilty also.

Have you ever heard any complaint of the want of regulation in the flax markets of Ireland, in the south and west?—No; I am not sufficiently acquainted with the flax in that state.

Upon the flax being prepared by hacklers, are there any and what difficulties which check the production of yarn as to the spinning?—The want of spinning-wheels in the cottages has prevented it being spun to a great extent.

Is the want of implements considerably felt?—Every where through every part of the south of Ireland.

There is no part of the ten counties which you have visited in which you have not found the want of implements matter of serious complaint?—A source of complaint constantly.

Is there a very great anxiety on the part of the people themselves to obtain possession of those implements?—Yes, every where.

Have you ever known wheels borrowed?—I have.

Have you ever known wheels hired?—I have sometimes, on extravagant terms.

Can you state what the terms have been?—No, I do not recollect.

Have you ever known wheels left in the possession of the females of one family by day, and the females of another by night?—Yes, I have. I have known instances of females walking six, seven, or eight miles to borrow wheels from their relatives.

In what condition are the implements, generally speaking, in an Irish cottage?—Imperfect generally; the construction of the wheel has been lately improved, but the old wheel is very imperfect and very much out of repair in general.

Has the improved wheel got into use throughout the counties you have mentioned?—Through the counties of Limerick, Cork, and Tipperary, I found the improved wheel.

Is it in general use there, or only in particular instances?—In particular places.

What is the price that is generally paid for wheels, the improved wheels?—From 7s. to 10s. and 12s. I believe in some instances.

And what for the old?—I believe the old is nearly the same price, very little less.

Have you any doubt that a more enlarged distribution, by placing the spinning-wheel more within the reach of the peasantry, would tend to the encouragement of domestic industry in Ireland?—It would be highly beneficial.

Does the deficiency which you have complained of with regard to wheels extend also to reels?—The same.

What description of implements have you seen the Irish cottagers use for the purposes of the reel?—The hand-reel.

Do you think it possible to prepare yarn for the market properly through the means of the hand-reel?—No, I should conceive not.

Have you heard from any of the weavers great complaints of the manner in which yarn is brought to market?—Yes, I have.

Have they stated to you that the imperfect manner in which yarn is reeled prevents their extended purchases?—Yes.

Has the same observation been made to you by any of the export merchants?—Mr. Besnard, of Cork, stated the circumstance, and Mr. Harvey; also Mr. Fisher, of Limerick.

From the best information you have been able to collect, do you not believe that if the yarn was reeled more accurately there could be a more extensive manufacture of linen in the south and west of Ireland, as well as an extended export trade of yarn?—Yes, I do; I believe the linen laws prescribe a certain mode of reeling it, which has not generally been attended to.

Do you think it possible to attend to those regulations which are rendered necessary by law, when the yarn is prepared by means of a hand-reel?—Not by a common hand-reel, certainly not.

Do you not believe that a more extended distribution of reels throughout the country would have the effect of improving the yarn market?—I am sure it would.

To what counties do your observations upon this subject generally apply?—Galway, Mayo, Sligo, Leitrim, Roscommon, Limerick, Tipperary, Cork, and Kerry.

Have you made any observation with regard to the domestic woollen manufacture in Ireland?—No, the domestic manufacture of woollen exists in so few places and in so small an extent that I scarcely noticed it.

In point of fact, do not the most of the peasants manufacture their own clothes?—Yes.

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The female peasantry are perfectly well accustomed to the spinning of woollen there as well as flax?—Yes.

Is the quantity of flax grown sufficient to afford employment to the females of a family during the whole year, or during a small portion of it?—During a small portion of it.

Is there any other occupation to which the spinners of that family can have recourse after the flax is spun?—I believe not.

What means have been taken by the London Committee for the relief of Irish distress, to counteract the want of employment and to promote industry amongst the people of Ireland?—There has been a sum of money amounting to 40,000*l.* appropriated by them to the encouragement of the linen trade.

Have you got the heads of the plan under which this sum has been appropriated?—I have.

[*The witness delivered in the same, which was read as follows:*]

“Heads of a Plan for the Encouragement of Industry in Ireland.”

“September 10, 1822.”

“The Committee, finding that the first object of their attention, the provision of a supply of food for the relief of the distressed districts in Ireland, has been very generally attained, have endeavoured to appropriate the balance in their hands for the encouragement of useful occupation among the Irish peasantry, *enabling them in some degree to supply their own wants, and tending, through industry, to promote their moral improvement, and to raise them above their present destitute condition.*

“From various sources of information, the best appropriation of the principal part of the balance seems to be for the encouragement of the growth of flax, and the manufacture of yarn, linen, and, perhaps, in some instances, of wool, through the means of the domestic industry of the people.

“This appropriation is not made in substitution of any efforts either public or private, but for the purpose of affording additional encouragement, and removing the obstacles which seem to impede the industry of the Irish peasantry.

“For this purpose, the following heads of a plan are preferred, in a full confidence that every effort will be made by all the parties on whose co-operation their success must depend, to make the proposed institution extensively and permanently useful.

“It is proposed to name nine directors or auditors in London, giving them a power of filling up vacancies in their own body, occasioned either by death or resignation.

“Three to be a quorum.

“The following gentlemen were appointed directors, pursuant to the preceding resolution: John Smith, esq. M.P.; Right Hon. J. C. Villiers, M.P.; Right Hon. Charles Grant, M.P.; Thomas Wilson, esq. M.P.; John Wells, esq. M.P.; Samuel Bosanquet, esq.; John Cator, esq.; Edward Stewart, esq.; William Bell, esq.

“A board of trustees to be appointed in the counties of Cork, Clare, Galway, Kerry, Leitrim, Mayo, Roscommon, Sligo, Tipperary and Limerick, not exceeding nine in number, the vacancies by death or resignation to be filled up by the directors. Three to be a quorum.

“A committee or committees to be appointed by the county trustees, of which they should be ex-officio members, together with a paid clerk or book-keeper to act under them.

“All remittances to be made by the directors to the county trustees.

“The mode of affording encouragement to be upon the plan of the charitable loans, so long established and so much approved of in various parts of Ireland. No aid to be given in money, but in flax-seed, flax, wool, yarn or implements; estimating these articles at prime cost, and not exceeding in value to any one person, within one year, the sum of 10*l.* or the value of two looms.

“The details of this plan to be carried into effect by the committees, acting under the direction of the trustees.

“The trustees to fix times for their own meeting, and to give a fortnight’s notice of their first meeting in the public papers.

“The committee to meet at such fixed times and places as may seem expedient for the purpose of receiving applications and deciding upon them.

“All implements, &c. thus considered as loans, to be paid for, together with five per cent interest, by monthly instalments, allowing three months to pass before the payment of the first instalment, and the whole sum being paid off within twelve months.

“Each person receiving assistance, to become bound himself, and to give security for the punctual repayment of the principal and interest by the specified instalments.

“Every application to be in writing, signed by the parties agreeing to become securities, and to be entered in a special register, together with the decision of the committee thereon, whether affirmative or negative.

“When assistance is given in flax-seed, flax or yarn, the committee to be authorized, if they shall so think fit, to receive payment in home-saved flax-seed, in flax, or yarn of a good quality, making a proportionate increase for the interest.

“The accounts and vouchers to be made up in a specific form, and submitted every year

Mr.
William Hyett.

(23 June.)

to the local trustees in the month of January, to be attested on oath by the clerk, certified by the committee, and a copy thereof to be laid before the directors in London, on or before the 1st of March in every year.

"Any person failing in making good his instalment, to be proceeded against either in his own person or by his sureties, at the quarter session next ensuing his default, and to become, in case any loss is incurred by reason of his non-payment, incapable of receiving any relief in future.

"Local contributions to be collected by the trustees and committees in aid of these objects."

The Committee perceive that this plan is founded upon the principle of loans repayable by individuals themselves?—Repayable in twelve months, at five per cent.

Are there any institutions in Ireland formed upon that principle which have been found to answer?—Many.

Have you taken pains accurately to inquire into those institutions?—I have.

Where have you visited any such?—In Dublin, Limerick, and Ennis.

Have you visited more than one establishment of the kind in the city of Dublin?—I visited two.

What was the result of your examination of those establishments?—I found the establishments in both instances flourishing, no diminution of capital, and that they had afforded the means of employment to a great many.

Were you informed by the individuals who managed those establishments that there was an anxiety on the part of the borrowers to repay with punctuality the sums advanced?—Yes, the money was in requisition, and of course regularly returned.

Have any considerable losses been sustained through the unpunctuality of the borrowers or their securities in the city of Dublin?—Through the negligence of the persons managing some years ago a deficiency had taken place in the fund, but by the great activity of the gentlemen now managing it there has been no diminution.

Having stated that you have made inquiries respecting similar establishments in the city of Limerick, was the result of your inquiries the same?—Favourable; the money was kept afloat constantly by the demands of the people.

Had there been any and what augmentation of capital in the Charitable Loan Society in the city of Limerick?—Very considerable augmentation in both instances.

Did you in that city also hear that there was a great anxiety on the part of the people themselves to be punctual and honest in their repayment of the sums advanced?—Yes, certainly, in every instance, with very few exceptions.

Was the result of your investigation at Ennis the same?—The same precisely.

In the charitable loans to which you alluded, is the relief given in money, or is it given in implements of labour?—In money, repayable at stated periods.

Do you conceive that that principle is as far removed from objection as giving the relief in implements of labour and articles of industry?—Where it is intended to confine it to a particular trade, the linen trade for instance, the preferable way would be to give implements.

Do you not think that there is in every instance a lesser danger of abuse where the relief is given by loan of the article which the peasant may require, rather than giving him the money which is the price of the article?—I do.

Then have you reason to think, from your experience in general, that the plan adopted by the London Tavern Committee is likely to give an useful impulse to the manufacturing industry of the poor?—Certainly.

During your experience in Ireland were you able to ascertain whether there is an anxiety on the part of the higher orders to promote the employment of the people?—In many instances.

Is it in most instances the case?—Perhaps not.

In the execution of your duty have you made any reports to the gentleman on whose behalf you were acting?—From time to time I made reports.

Can you furnish the Committee with the extracts from those reports which bear upon the subject of their inquiries?—I can.

[The witness delivered in the same.]

Have you looked over those extracts?—I have.

And you see no reason to alter the opinion which you expressed at that time?—None whatever.

Do you conceive that there are any advantages connected with the loan system which

which make it preferable to any gratuitous distribution, or any distribution at reduced prices?—The loan system is greatly preferable.

On what ground do you think it is preferable?—It affords a greater number of people an opportunity of benefitting by it.

Independently of that, with regard to the persons themselves, do you conceive that the loan system is preferable to a system of gratuitous distribution?—I do.

Why?—By inculcating habits of industry and punctuality.

Have you ever had any reason to believe that the peasantry themselves preferred the relief administered to them by the medium of their own industry to any gratuitous relief?—Yes, I have known people in a very distressed condition not actually refuse but decline taking gratuitous relief, and prefer, in many instances, employment by which they could receive remuneration.

Have you known that in more instances than one?—Yes I have, and in more places than one.

Can you state to the Committee any instances of that description which you have met with?—I believe I have furnished them to the Committee by my report which I have delivered in; I will read an extract from a letter dated August the 5th. “A regulation has been lately adopted by the Relief Committees in general, which decrees, that wherever it is practicable, labour shall be exacted from every individual receiving assistance. In the first instance, when famine threatened the most fearful consequences, provisions were liberally bestowed, but now that the immediate danger is over, and the stores are well filled, it is deemed right to weaken the dependence upon the bounty of strangers. The above measure was also necessary to satisfy the high feelings of some persons, who, whatever was their distress, would not partake of the relief without returning something like an equivalent; but it must be confessed that others manifested much reluctance to undertake any labour, under an idea which was kept alive assiduously by the designing, that the money was sent over for gratuitous distribution, and that work of any kind was an imposition.”

What was the state of agriculture in those parts through which you passed; was it good or bad?—In some places good, and in some bad.

Generally speaking, was it an improved system of agriculture?—Generally not.

If there were a more improved system of agriculture introduced into the country, have you any doubt but that a more enlarged employment of the people must necessarily result?—Certainly, I have no doubt of it.

What are the causes which you consider to stand in the way, or impede the introduction of an improved system of agriculture in that country?—I am not sufficiently acquainted with it to say.

Do you know whether the peasantry of Ireland are in possession of the requisite implements for cultivating their land?—They are not; their implements are generally very rude, and not well adapted.

Do the same causes to which you have referred with regard to manufacturing industry apply also as checks upon improved agricultural industry?—They do.

Are the divisions of land in Ireland large or small?—Very small.

In visiting the south and west of Ireland, did you pay any attention to the means of employment which may be afforded to the peasantry of the country through the fisheries?—Yes.

Are there any efforts now making to increase the facilities of employing the people in the fisheries?—There have been lately efforts making.

What are they?—That of supplying the people with boats, in several instances, through the medium of the loan system, by the exertion of a portion of the money sent by the London Tavern Committee; I believe we have a report on that subject.

Do you mean to suggest that the said causes which repress manufacturing and agricultural industry, also repress the industry of the people upon the sea-coasts?—They do.

What is the state of the boats and fishing apparatus upon the sea-coast?—Very rude, and very deficient.

Have there been any efforts made that have come within your observation for increased accommodation in harbours?—There have been lately; during the last summer piers have been erected, which will be highly beneficial.

You have stated that the fishermen along the coast have received relief by repairs of their boats, can you give us any instance in which that system has been pursued with good effect?—In the neighbourhood of Dingle; I have the report with me.

[The witness delivered in the same, vide Appendix.]

This is not printed in the Appendix.

Have

Mr.
William Hyett.

(23 June.)

Have you any doubt that the application of the loan system will produce the same effects with regard to fisheries that you anticipate may be produced with regard to manufacturing industry?—It will produce the same effects no doubt.

Has the loan system been yet applied to the agricultural industry of the country?—I believe not.

Have you heard of any efforts having been made for the purpose of instructing the peasantry of Ireland in an improved system of agriculture?—No.

You have not heard any thing of a school which is established in the county of Wexford?—No, I have not.

Did you pay any attention whilst you were in Ireland, to the system under which the repairs of the public roads are now conducted?—Yes.

Do you think that system affords as extensive and as general employment to the people as might be expected, from the expense to which the counties are subjected?—It has afforded employment during the last season, but the roads being once made of course there will be less occupation for the people in future.

Are you aware whether the repairs of the roads by the grand juries in Ireland are confined now to particular times of the year?—Yes, they are.

Immediately before each assizes, is it not?—Yes, it is.

What were the circumstances which led to the repairs of the road being carried on only immediately preceding the Assizes?—I am not sufficiently acquainted with the subject to answer that question.

Do you not think that a better regulated repair of the roads in Ireland, which would enable the work to be carried on at such times during the whole year, as would be most advantageous to the community, and would give more useful employment to the peasantry of the country?—Certainly.

The summer assizes occurring in the months of July and August, the employment of the people in repairing roads just coincides with harvest employment in many instances?—In many instances it does.

If that employment took place previously to the commencement of the harvest, would it not produce a more regulated demand for labour throughout the country?—Certainly.

Have you ever heard that the tenantry of the individuals who obtain presentments are those who most frequently are employed on that work?—They are employed in preference.

Have you passed through any and what districts of Ireland, in which there are considerable difficulties thrown in the way of carrying goods to market, from the want of proper roads?—In the mountainous districts in general.

To what districts do you apply your observation?—First to Connemara, on the mountainous coast of Cork and Kerry.

In those parts of the country where there is a want of roads and proper means of conveyance, have you witnessed any efforts made by the peasantry themselves in carrying manure and improving their land, notwithstanding the disadvantages to which they are subject?—In carrying it on the backs of horses, when the road has not been sufficiently good for other conveyances.

Have you seen the use of marine sand in that way carried to any considerable extent?—No, I have not; I have heard it said. I believe it is not an uncommon thing for several of the peasants to bring their goods eight or ten miles across the mountains, till they meet with the road, then put one of the horses in the car, and take it on to the town; one horse will then draw as much as five or six will previously carry.

During your visit to Ireland, had you any opportunities of seeing establishments employing the industry of the Irish, which were promoted through the introduction of English capital?—None at all.

You did not see a single instance in which English capital was introduced permanently for the manufacturing industry?—Not one.

Do you conceive there exists any repugnance on the part of English capitalists to invest their money in such establishments?—In the present situation of Ireland, I do.

You conceive there is an indisposition to advance money on Irish securities?—Yes.

What are the causes to which you attribute this indisposition?—The unsettled and disturbed state of the country.

Have you any doubt in your mind, that if the tranquillity of the country were insured, that English capital would find profitable employment in that country?—I have no doubt that it would instantly.

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Did you visit the county of Leitrim?—Yes, I did.

Did you make any observation with regard to the great coal field in that county?—There are great coal mines in that county, but the difficulty that exists in getting them conveyed to a canal would require, I believe, a railway of some three or five miles; and the coals are not generally used: the quality of the coals is very good.

Do you conceive that the establishment of a railway from the Leitrim coal field to the Shannon, on the one side, and to Sligo on the other, would have the effect of producing a very considerable demand for coal?—It would, certainly.

You have been professionally employed as a civil engineer?—Yes, I have. Not exactly as a civil engineer, but as a military engineer.

You have acted under the authority of the engineers directing the trigonometrical surveys?—Yes, for twelve years.

Then you entertain no doubt as to the advantages that would result from such a railway?—No doubt whatever.

Are there not considerable quantities of ironstone to be found in the county of Leitrim?—There are; and where the counties of Leitrim and Sligo join, in the junction of the counties there are to be found limestone, coal and ironstone.

Are you aware whether there are any clays to be found in that part of the country which might be adapted for pottery?—I believe not in that neighbourhood.

Have you heard of the existence of such clays in any other part of Ireland?—In the county Tipperary and neighbourhood of Cahir.

Are there any other coal works which have come under your observation in the parts of Ireland you visited?—There are, in county of Cork.

Where are those coal works situated?—Near Mill-street. I think it is at Grange, the same difficulty of conveying coals to a proper road exists.

Have you any doubt that the establishment of the railways, of which you have spoken in the county of Leitrim, would produce an extended employment of people in that part of the country?—None.

Are you aware whether there is any deficiency of fuel now felt within the range of supply of the Leitrim coal field, which would be removed by the establishment of such a railway?—Certainly; there is a scarcity of turf in the neighbourhood of Boyle, and several miles about that part of the county of Roscommon that joins Leitrim; the deficiency of that would be supplied by the coal, if there were proper means of conveying the coal.

Can you state generally, whether in the event of greater security and tranquillity existing in Ireland, and the introduction of English capital into that country, there would be any difficulty in finding hands for carrying on industry in that country?—None whatever.

Then the Committee are to understand from you, that you believe there is every anxiety on the part of the Irish people to procure employment?—Every where, certainly.

In the course of your visit, you have met with no one fact which leads you to doubt the anxiety for employment on the part of the people?—I have not.

Mr. *Pierce Mahony*, called in; and Examined.

WHERE do you reside?—In the county of Kerry. I am intimately acquainted with the whole of the province of Munster.

Have you long resided in Kerry?—I have resided there from my infancy.

Are you able from your experience in that country to state, whether there is, generally speaking, sufficient employment for the people?—The greatest possible want of it. The town, in the neighbourhood of which I reside, is Killarney, and there is a great population there, and I am quite certain, there is not one tenth of the employment necessary; it is a town that contains, as well as I can collect, about 7,000 people, who are mostly of the poorer class. There is no manufacture there, except a slight cotton manufacture, and there is a great anxiety on the part of the people to have that extended.

How long has the cotton manufacture been established there?—I should suppose about twelve years; it is carried on on a very small scale, and with a very limited capital.

Is it spun by hand?—It is spun by a reel, otherwise by hand; it is sent out to the people of the country, and they return it after having spun it.

Mr.
William Hyett.

(23 June.)

Mr.
Pierce Mahony.

Mr.
Pierce Mahony.

(23 June.)

Is that cotton for home consumption, or is it all exported immediately?—It is exported, I understand it is used for cotton wick; I believe it goes to the West Indies.

Have you heard of any of it being sent to the English market?—Yes.

Can you inform the Committee whether there is any anxiety on the part of the people themselves to procure employment?—The greatest possible anxiety, I never knew it otherwise; and the greatest anxiety on the part of the people for education.

Are the wages of labour very low?—I conceive they are low. The great way in which labour is paid there for agricultural purposes, is by giving a small piece of land which is charged high, and the rate of labour is about 6*d.* a day in those cases; in the town it is 8*d.* where no land is given.

Speaking of agricultural employment, is that the money price for labour, or is there an allowance to that extent in account for the rent of land?—I do not talk of the immediate neighbourhood of towns, but in country situations it is generally allowed for rent. The peasant gets a potatoe garden and a house, and he is charged, in my opinion, very extravagantly for it, and he is under a contract to work, and his general rate of wages is 6*d.* sometimes much less.

Can you state what is the general charge which is made in the district with which you are acquainted, for the house of the peasant and his potatoe garden?—It varies, as it must, according to circumstances; but generally speaking, I should think about five guineas a year might be called the fair average of what they pay, for about half an acre of land and a house, a miserable hut; I think it is about that sum over the whole face of the country; of course there are some cases in which it is less, and other cases in which it is more.

To what charges is a person, paying a rent of that amount, subject, independent of his rent?—He is subject to a tithe on his potatoes, which is generally what he grows, and on flax. I do not believe that the clergy charge them for either cabbages or small green crops.

Have you ever known this charge for tithe operate as a discouragement to the employment of the people?—It is considered very vexatious, and they very unwillingly pay it; but I do not think that, generally speaking, the persons whom I talk of look to any thing more than barely subsistence.

Is there not an Act of Parliament in Ireland which exempts newly improved land from the payment of tithes for a certain number of years?—There is; but the ignorance of the peasantry on the subject is so great, that it is not enforced.

Are there not many technicalities relating to surveys and notices which by that Act of Parliament are required to entitle the tenant to exemption from tithe, which in nine cases out of ten render that inefficient?—I look upon it that those provisions render it nugatory, and I know an instance on an estate in Kerry in which I was professionally consulted; it was with respect to tithes of a mountain, it is quite a barren mountain; and there happening to be some disagreement between the clergyman and the landlord, the consequence was, in two or three days after, a notice was given, demanding tithes upon this barren land, that had never paid tithe before. I know the tithe to be insisted upon, and enforced, though it was clear, that, if the provisions of the Act had been attended to, that land would not have been titheable.

What is the state of agriculture in the parts of the country with which you are acquainted; does there exist there an improved system of agriculture, or does the old rude system of farming prevail?—The system is very rude, the implements are very bad, and the mode of using them equally so. A plough is generally attended by three persons.

Are they generally obliged to hire their ploughs?—Sometimes. I believe the farmers lend them about to each other; but a farmer, generally speaking, has not a plough.

Have you any doubt that a more improved system of agriculture would lead to a more enlarged employment of the people?—Not the slightest doubt. In point of fact, I look upon it that the quantity of produce upon the land is lessened by the present system. Indeed I know this from my own experience, and that of gentlemen who farm themselves; we know that our land produces vastly beyond our neighbour's land, if he is a poor man.

Have any means been taken in those districts with which you are acquainted, to introduce an improved system of agriculture?—Sometimes gentlemen have, by farming themselves, shown the people what can be effected by improvement; and there

287

Mr.
Pierce Mahony.

(23 June.)

there have been some instances in which they have brought over Scotch and English farmers to teach their workmen that system, and it has had a good effect.

Have you known any instances in which efforts have been made in the county of Kerry to instruct them in the proper system of draining and embankment?—In the west, Lord Headly carried on a very extensive work of embankment; indeed he has expended a large sum of money, and very effectually; but with regard to land draining, we are very deficient in that respect.

Do you not think that an improved system of drainage would be the first step that is requisite for the improvement of the country to which your observation applies?—I am of that opinion, and I will state my reason for it. The great manure in that country is lime, and the lands are swampy, and the consequence is, that where the lime is put in, it for a year or two works well, but the water ultimately destroys it; but if the water was taken off, the lime would work vastly better.

In those parts of the country with which you are acquainted, can you inform the Committee whether considerable efforts are or are not made by the peasantry themselves in order to improve the land in their occupation?—Decidedly; they bring manure with great labour; and upon the sea coast particularly it is observable their great anxiety in that respect. I have been witness very often at the sea coast in seeing the people collecting the sea-weed, and other manure that the sea gives them, in small baskets, and the women, boys and men carrying them distances upon their backs, when there was no road.

What is the greatest distance which you have known them to carry those loads?—I may say that I have known them carry two or three miles in that way, and then deposit it upon the road, and if the car could move, then carried in the car, otherwise most generally in the baskets thrown like panniers across the horse; that is the general way in which the manure in that part of the country is carried.

What is the state of the roads in this mountain district?—They are wretchedly bad; they are now improving, in consequence of Government grants. There is a road round the coast, that is partly finished. Mr. Nimmo, I find, recommended it in his plans, and it has been to some extent adopted; but there are several districts in which there are no roads at all.

Has it been adopted a sufficient time to enable you to state the effects of that improvement, where the effects are visible?—It has not been adopted sufficiently long to be able to say that; but I know this fact, that Iveragh, which is the most distant part of the county of Kerry, sent its butter to Cork exclusively as the market. I should think the peasant had to travel a distance of about seventy miles from his house, and his load was generally two firkins of butter, that was one hundred weight; they travel without lodging, with merely buying a piece of bread or a sup of milk upon the road, and so they make their journey and return again; all they can have is the price of a hundred weight of poor butter. I have often heard it stated, and I believe it to be the fact from my own knowledge, that the general average of the expense of the peasant upon that journey for himself and his horse was not 4s.; generally about 3s.

What are the obstacles that have prevented the peasantry of the barony of Iveragh from taking their butter to a more favourable market?—The want of roads; since the road has been opened it has reduced the distance considerably, and when another road, that is projected through Sir Nicholas Colthurst's estate, is made, I suppose it will reduce the distance nearly thirty miles.

Could not a nearer place of export be found without difficulty for this butter, instead of going this immense distance to Cork?—Certainly, their country home market for it upon that coast there, is the river Kenmare, which is an excellent and safe harbour; that you may call the home market for the baronies of Glanrought and Dunkerron; and the barony of Iveragh could have a home market in the neighbouring barony of Trughanacmy, which is Miltown, and Mr. Nimmo's plans I find speak of that part.

What difficulty is there in the way of reaching this place at the present moment?—None to Kenmare river, but with respect to Miltown, the bar of Inch is the impediment.

With respect to the home market, and carrying it down from Cahir, or any part of Iveragh, what difficulties exist now to prevent the sale taking place at the domestic market?—No difficulties as to roads at present to Miltown, but there is a difficulty as to Kenmare, because the road is not perfectly made in that part of the coast.

Is the price obtained at Cork so much higher than at the nearer markets?—There are no persons to buy at those places; there is an export at Tralee.

Mr.
Pierce Mahony.

(23 June.)

An increasing export?—An increasing export very considerably with respect to oats. I understand the increase last year was to the amount of 50,000*l.* in point of export.

How long is the individual farmer in making this journey from Iveragh to Cork?—I should suppose he travels thirty-five miles a day; he travels night and day.

Is there not a considerable portion of the county of Kerry and Cork which consists of bog and mountain?—A considerable portion in Kerry, and a great part in Cork.

The mountains of Kerry consisting of two descriptions of that which is called the wet, and that which is called the dry mountain, do you conceive that that dry mountain land might be made applicable to the purposes of sheep feeding?—I do not know. I know the mountains have been considerably improved, and in some parts they are now producing oats and barley through the assistance of manure and lime.

With regard to the wet mountain, or bog, are you aware whether there are any difficulties now felt which prevent the dividing and improving of any of those districts?—I know in the barony of Iraghticonnor there is a considerable boggy country there, which could be effectually drained by opening the mouth of the Cashin; I have seen it myself, and I understand something has been done by Mr. Horton and Mr. Harenc with respect to it.

What is the difficulty you conceive to stand in the way of the improvement to which you have just adverted?—A want of capital in individuals, and a want of unanimity in pursuing any common object.

In the event of the drainage being effected by lowering the bar of the Cashin, are there any means by which you could impose an assessment in proportion to the benefit conferred upon all the individuals whose lands were thereby improved?—I conceive that there would.

Is there any law that would enable you to levy an assessment according to the amount of the benefit conferred?—Not at present.

Do you not conceive such a general law to be indispensably necessary, in order to carry into effect any enlarged improvement in the way of drainage?—Unquestionably, I conceive till such a law is passed you will have the country remain in the same state.

Do you not conceive that such a law would be generally applicable to the bog lands of Ireland?—Certainly it would; for this reason, a bog is divided by ideal boundaries, and sometimes by real boundaries, and if one proprietor is anxious to drain his bog he cannot do it, because he cannot obtain a passage through the others; it is therefore necessary to have unanimity to carry the design all through, and if it is broken in upon in any part he cannot accomplish it, so that no person can do it without he has the whole district.

Does not the same observation apply to the maintenance of embankments against the sea or against rivers?—Decidedly.

Is there any mode under the law, as it at present exists, of imposing a territorial tax for the maintenance of embankments, equal to the benefit derived from them by individuals?—Now there is no law of that sort, and it is wanted very much; if along the course of a river, one person is disposed to expend money on embankments, he cannot do it with effect, his money must be lost, unless he is joined by all the persons who hold lands along the course of the river.

Have you known any instances of considerable loss accruing to individuals from the want of such a law as that which you have now recommended?—I have known instances of the total impossibility of doing any thing effectual in that way; in more than one instance, on account of the unwillingness of other parties to join.

Have you known any instances in which banks have gone out of repair, and losses have been sustained from floods, in consequence of the want of a system of co-operation?—Several; I was an individual sufferer in that respect.

Has there been any considerable manufacture of linen in any and what part of the county of Kerry?—There was a very considerable manufacture of linen in Dingle; it was a coarse linen, and I understand in consequence of inattention in the regulation of the markets, and the mode of making it up, it has got into disrepute, and the consequence has been, an almost total loss of the market.

Are you acquainted with the linen market of Clonakilty?—I have heard of it, but I never have been at Clonakilty.

Have you heard whether it has of late increased considerably?—Yes, I have.

Have you heard any of the causes to which the increase of the manufacture at Clonakilty has been attributed?—The regulation of the market. With respect to drainage,

289
Mr.
Pierce Mahony.

(23 June.)

drainage, I think it is one of the most important things in the world. As to the necessity of deepening rivers that run up estates, that cannot be done without the general co-operation of the parties whose estates lie along the rivers, and it is very destructive to some estates, others are not injured by it; consequently the person not interested in it makes no exertion, and the man who would do it is prevented.

Is there any legal process, by which, at the present moment, these improvements upon bog lands can be effected?—None, that I know of.

Is there any decree from the Court of Chancery, by which such undivided lands can be divided?—There is a writ of partition, but that will not effect the object.

But even with reference to the first step, namely, the writ of partition, is it not an expensive proceeding?—It is very expensive, and on account of some technicalities of the law, it is frequently impossible to get it.

Do you happen to know of any instances in which the difficulty of extinguishing commonal rights without resorting to separate Acts of Parliament, has occasioned serious inconvenience, both as it respects the improvement of the mountain, and also as affecting the peace of the country?—There is a remarkable case, and one which is a very extensive evil in the county of Waterford; the mountains are called Slieve Graive Mountains, those are very extensive, and cover almost the greater part of the barony of Decies. The improvement of the mountain is totally checked; great disturbances had arisen about a year and a half ago, and several lives had been lost, houses had been levelled, and old fences that were standing for thirty years in some cases taken down, and this has arisen from a notion among the common people, that common lands belong to every body, and they levelled the fences and the houses under this opinion, and when they were resisted, the consequence was dreadful riot and loss of lives.

Does not a considerable proportion of the population of the county of Kerry migrate from that county in search of employment elsewhere?—Yes; particularly from the barony of Glanerought.

Where do they seek this employment?—They go to the inland counties, Cork, Tipperary, Limerick, Kilkenny and Waterford, and a vast number go to England.

What are the causes which you conceive to prevent their profitable employment at home?—I look upon it that one of the greatest evils in that part of the country is want of a road; there is no road that is at all passable; it is on the Marquis of Landown's estate; it is on the Cork side of the river of Kenmare, and I consider the population there, considering the country that they reside in, is quite suitable for any agricultural purposes; they have no fishery.

Do you not think that the want of capital is also one great cause?—There is no capital at all.

Do you conceive that if capital could be introduced into that country it could be profitably employed there?—I have no doubt that the introduction of capital into that country, above all others, would be most useful.

What are the causes which you conceive to prevent the introduction of capital?—The causes are various, but I think first, the want of roads; there can be no danger respecting the harbour of the river, for it is one of the finest perhaps in any country; the next cause is, perhaps, the state of the country, which gives an impression here in England that no man is safe; and I think until the country is quite quiet you will never have English capital invested there to any considerable or available extent.

Do you consider that there is a general aversion among English capitalists to invest money in Ireland?—There was a general anxiety about a year ago to invest it, and I happened to be concerned in several loans; but lately I have written to several persons who have returned me for answer, that until the country was quiet they would have nothing more to do with Ireland.

Do you conceive that any difficulty has arisen with regard to the investment of English capital, in consequence of the want of proper means of recovering money in that country after judgment is obtained?—I do; and I look upon it that that is the greatest evil that we have to complain of.

Will you state in what you conceive the evil to consist?—I conceive it to exist in the management of the office of sheriff. The system has been grossly abused. There is no such thing as executing a writ as you do in England, what is commonly called a marked writ or a capias upon judgment. I mean to confine that observation to persons of what are called the rank of gentlemen. The habit of sheriffs, except in the city of Dublin and in the county of Cork, is to grant no specialty at all, and I consider that the greatest evil, for this reason, that the creditor is always struggling

Mr.
Pierce Mahony.

(23 June.)

to make the sheriff responsible for the debt, where he refuses the specialty, whereas, if he grants the specialty, the debtor and creditor would come into contact, and would settle it.

Have you ever heard of arrangements being made in Ireland between the debtors and the sub-sheriffs to prevent the execution of legal process, or at least to make a system of notice necessary on the part of the sub-sheriff, so as to impede the proceedings?—It is a constant habit on the appointment of the sub-sheriff, that he gets notice from the persons that are afraid of him that he will be paid his fees on the writs delivered, if he will give notice.

Does this practice very generally prevail?—I understand it to prevail every where except in the two places I have mentioned. There is a habit of giving specialties in Dublin, and that habit exists in Cork; but I dare say there are places in the county of Cork where an arrangement might be made with the sheriffs.

Do you know of any difficulty existing where returns are not made in due time by the sheriff, in getting the decision of the court with respect to imposing fines?—We feel it particularly since the passing of the last Law Regulation Bill; it is one of the greatest grievances we have to complain of. The taxing officers under that bill will allow the party no costs after judgment; and in point of fact, being a solicitor and attorney myself, I can tell the Committee that our principal and most difficult duties begin to be performed after we have got execution; in fact, litigation generally begins in Ireland, where it ends in England, at final judgment; all the rest is commonplace, but then our difficulty is in getting the fruits.

You have stated that the system to which you have referred with respect to the sheriffs, is the system pursued in regard to gentlemen, are the Committee to understand that any other, and what system, prevails with regard to debtors of the lower classes?—I consider that the sub-sheriffs, not being paid for any favours by them, do not give any; it is more their interest in those cases to give a specialty, because they are paid for it.

Then the Committee are to understand that one rule of practice prevails with regard to the higher classes, and another with regard to the lower classes?—Yes.

Is there or is there not a stricter mode of recovering debts from the lower classes than from the higher?—Certainly, arising from the granting of specialties by the sheriffs against the poor, if required, and declining to do so against the other class (the gentlemen) the requirer.

Do you conceive that if it were made imperative, under penalty, for a sheriff to make a return of every writ within a limited time of the period when the return day elapsed, that that would be a beneficial alteration of the law?—Most decidedly, as considerable inconvenience and expense arises from the present practice.

Do you consider that it would be useful to make the sheriff grant specialties in all cases, upon getting reasonable security?—Most certainly; it would tend to diminish the expenses of the debtor, and to increase the security of the creditor.

Do you not conceive that such an alteration of the law would have the effect of inducing capitalists in England to invest their money more regularly in Ireland, if they had that ready means of recovering debts?—Most certainly, I do.

And such investment of English capital in Ireland would, you have no doubt, lead to a more extended employment of the people?—Beyond any doubt; and as a relief to the landed interests, I could procure money at four or five per cent here for gentlemen that are paying six for it in Ireland, if the system of administration of the law and the management of the poor were altered.

Of what material does the clothing of the peasantry consist?—The frieze for men, and stuffs or cottons for the women.

Where is that frieze and stuff manufactured?—By themselves.

Are they also pretty generally acquainted with the manufacture of flax?—They are.

Do you conceive that the manufacture of those articles could be carried further than it now is?—It is now in a very indifferent state.

Do you conceive it could be carried further?—Certainly, it could.

To what causes do you attribute its not being carried further?—I attribute it to the want of proper machinery, as well as the want of flax-seed in the proper season.

Is there a great want of improvement in the manufacture in the district to which you refer?—Certainly, in not only manufacture, but agriculture.

Have you ever known a deficiency of the flax-seed lead to a delay in sowing flax, so as to make the crop eventually less productive?—This very year I have known that the delay was injurious.

Have

(23 June.)

Have you known it in other years as well as this?—I do not think my attention was directed to the sowing flax till within the last two years.

Will you state in what the deficiency of implements consists with regard to the linen manufacture; what implements do you allude to?—Wheels, reels, hackles and scutching-mills.

Is there a great anxiety on the part of the Irish peasantry to become possessed of wheels and reels?—There is the greatest anxiety.

How is the deficiency now provided for; do they borrow or hire wheels?—They both borrow and hire.

Can you inform the Committee what rate is charged for the hire of a wheel, and what is the value of a wheel?—No, I have no notion of the price; it is more generally paid by giving labour in lieu, and in the same way they pay for ploughs and horses by labour.

This system of exchanging labour for commodities prevails to a very considerable degree, does it not?—It does certainly, particularly in potatoes.

Labour itself is paid for not by money, but either by land or by labour in return, is it not in many instances?—Most certainly it is paid for, either by labour or land most generally, almost invariably, except in towns or cities.

Have you ever been enabled to compare the difference between the labour given for a money payment, and that labour which is given for an equal payment of another kind?—I have; any person who pays money is sure to have his work well done, but if it is paid in other ways, they look upon it as a tax upon their persons, do the work badly and slowly.

What do you conceive to be the money price of labour in your neighbourhood, as compared to the account price?—I should think, that drawing the comparison I have this moment, that it is cheaper to pay money to a person that could manage the land with advantage; but in point of fact, the differences as five pence to eight pence between money and labour nominally, without regarding the difference in the effectiveness of the labour.

Is there a money system of labour or an account system of labour, generally applied to the employment of the people on the public roads, repaired by a grand jury presentment?—It generally is an account labour; and because the tenantry of the person who gets the presentments, are most generally the persons employed in the work; the gentleman who has the presentment, takes care that the money is not paid except to himself, and he puts that to the credit of his rent accounts with his tenants, that is the general system; I might almost say, there is not a single exception, except in a few singular cases.

Then all the disadvantages to which you have alluded as applicable to the account system of labour, apply to the repairs and public works performed by grand jury presentment?—Certainly they do.

The labour is given reluctantly, and it is generally of a less valuable quality than it would be if they were paid with money?—I think the evil is even in that instance greater, for this reason, that it often happens that the person who gets the presentment has his tenantry at a distance, instead of coming at an early hour and from a reasonable distance, come from a great distance, and are consequently less able to do the work.

Have you any doubt, that if after the presentment is made, the execution of it were to be effected by open contract and paid for in money payment, that a very considerable reduction of expense, as well as a better execution of the works would follow?—None; I conceive the system ought to be altered to a local commission, who would contract with the people of the place; if that was done, there would be an emulation amongst the people to perform the work, and there would be an anxiety among the people to have it done well, because they would have no immediate interest in the work.

Does it not frequently happen under the present grand jury system, that the execution of the public works is postponed to the most inconvenient season of the year?—It is, and I think it arises from the mode of employment; the work is done reluctantly, and generally speaking, it is neglected until the eve of the assizes, it is then forced on by the person who has got the presentment, for the sake of getting his money, and having his account settled on affidavit.

Does not this frequently occur at the moment when the peasantry themselves, who, in your view of the case, are the least interested in the execution of the work, may be profitably engaged for themselves, either at their early harvest or at their turf gathering?—Certainly it does; I consider that the consequence of this hurry, not

only

Mr.
Pierce Mahony.

(23 June.)

only tends to diminish the value of the work, but it also takes the poor class of people that are engaged in it all at once, to the great hindrance of their other duties; because the whole farm is swept of its people for a particular time, and the consequence is, that all his other duties must necessarily be neglected.

Have you ever known instances in which either the harvest of the individuals or their turf-cutting have been seriously impeded, in consequence of this operation of the presentment laws?—If wet weather should happen under those circumstances, it must be lost.

Have you ever known such instances happen?—Certainly.

Therefore the peasant loses that which is of advantage to himself, in consequence of being carried away to a work which is rather more advantageous to another?—Certainly; he is obliged to sacrifice his own interest to that of his landlord, at the time, probably, to prevent distress upon his land.

Is the deficiency of implements of agriculture very much felt in all parts of the country?—Certainly it is, particularly in ploughs and carts; there is no such thing hardly, except in possession of gentlemen, and the spade and shovel of that country, as compared with the same implements in this country, are very bad implements indeed.

You have stated that the females of the country are generally practised in the spinning of flax and wool?—They are.

Is there any other difficulty do you think which stands in the way of their employment in those branches of industry, beyond those to which you have alluded?—No, I do not conceive there is.

Is there any imperfection in the mode in which flax is prepared for the market?—With respect to the way in which flax is prepared for the market, I think I have alluded to that; the habit of using what is called the hand-scutch is very injurious both to the manufacture and the people, it is a loss of time to them, and it is a destruction of the raw material.

There have been of late years some scutch-mills introduced into your county, have there not?—Yes, they have been introduced by three gentlemen.

Has the introduction of those mills been productive of benefit?—I have heard all those gentlemen state so.

With regard to reels, what is the description of reel for the preparation of yarn which is known in your county, is it the common reel?—The common reel is generally a cross, or probably six projecting spikes, with a top to it just to catch the yarn.

Do you think it possible to prepare yarns for the market with reels of that description, so as to comply with the present regulations of the law?—I am not acquainted with the regulations.

Do you consider that the population of that part of the country has been rapidly increasing?—Beyond all comparison in respect to other countries.

What is the state of education there?—It is very low indeed, but there is a great anxiety to learn.

In any of the establishments of education which exist in that country, have any steps been taken to connect the education of industry with the education of letters?—In a female school, which is under the care of some ladies who are nuns in Killarney and Tralee, there has been a system of teaching them to spin introduced, but I am not aware of any other instance.

You have not heard of any instance in which male industry has been excited by instruction?—No.

Is not the description of schoolmasters who are in your neighbourhood of the lowest class?—They are, and I think in that respect until that is remedied there can be no effective education.

Are there any books in circulation amongst the peasantry which are calculated to instruct them in habits of industry?—No, I do not think there are; I never heard of any.

Can you state what description of books they do read?—Generally common spelling books and story books, and one very dangerous book that is circulated through the country called Pastorinie's Prophecy; the circulation of it in the south of Ireland is quite astonishing.

Do you conceive the establishment of schools, and connecting with those schools instruction in industry, would lead to more profitable employment of the Irish poor?—Certainly, I think if the youth were instructed in industry as well as in letters, it would tend more to form regular habits in the poor than any other measure.

Do

293

Do you conceive that an instruction in the elements of improved agriculture and farming would be desirable to introduce in those schools?—Certainly, for if the people became aware of their advantages, they have intellect enough to adopt them. Is not there the greatest anxiety on the part of the people to procure such instruction?—All instruction.

Mr.
Pierce Mahony.

(23 June.)

Have you ever known any instances in which, when the children were employed by day they have attended schools in the evening, rather than be left without instruction?—Yes.

Have you ever known any instances in which parents of the lowest class, and in the deepest distress, have made considerable efforts in order to provide for the instruction of their children?—Yes, certainly; when they could not pay by any other means, they have paid by labour or turf, or other means of that sort.

Do they not consider it as their first duty, if possible, to provide for the instruction of their children?—I conceive they do, and that it is an object most anxiously sought after by them.

But the mode of instruction at present prevailing, you consider to be very deficient?—Very deficient.

Do you in fact consider the present system of instruction administered in your neighbourhood, to be a benefit to the people, or the reverse?—I should say the reverse; they scarcely ever acquire more than to read, without understanding, or to write their names badly; but for any useful purposes they have no education at all.

What is the general character of the persons who undertake the duty of schoolmasters?—Their general character is bad; they are generally turbulent and disorderly persons.

In cases of disturbance in your county, should you not be disposed to look upon that class of men as objects of peculiar suspicion?—They have always been looked upon as such.

Can you state the number of residents in the county in which you reside; do you know any large district without any resident gentry or clergy?—I do, and have been frequently talking on the subject with the gentlemen of that county, and we are all decidedly of opinion, that the county of Kerry pays to absentees alone, above 200,000 *l.* a-year, not one shilling of which is ever spent in it.

Are you acquainted with the district of country between Charleville and Castle Island?—I know the district very well, and from Newcastle to Castle Island there is not a single gentleman resident.

How many miles does that comprehend?—Twenty; then there is another district which goes from Abbyfeale to Newmarket which is similarly situated; there is another to Mill-street which is similarly circumstanced, and from Newmarket to Charleville, in another direction, it is equally so, I understand.

In the late disturbances was not that district the principal seat of the disturbances?—Certainly; from that district the disturbers took their own opportunities, and came down and destroyed the country. We look upon it that no greater benefit could be performed to that part of the country, than to cut military roads through it in all directions.

Has there not been a considerable alteration in the state of tenures lately in the counties with which you are acquainted; an alteration of tenancies?—Yes; in fact you may call them all now as tenants at will.

In consequence of those alterations, have not many persons been deprived of their ancient farms?—Certainly.

Have not many houses been taken down, and many small farms been united to large?—There have.

Martis, 24^o die Junii, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

Mr. Robert Pauncefote, called in; and Examined.

Mr.
Robert Pauncefote.

(24 June.)

HAVE you had occasion during the last year to pay any particular attention to the state of Ireland?—Since the 5th of last June I have been employed by the London Committee for the Relief of Irish Distress, to conduct the correspondence from that period to the present moment.

You have been employed as secretary to the committee?—As secretary.

Mr.
Robert Paunceforte.
(24 June.)

During what length of time were the labours of that committee continued?—Mainly from the 7th of May, when they entered upon their business, until the 29th of August, when they determined upon the appropriation of their balance.

What was the amount of money which was placed at the disposition of that committee?—The amount is upwards of 298,000*l*.

In your situation as secretary, it was your duty to carry on the correspondence of the committee, was their correspondence of a very extensive nature?—It was.

To what counties in Ireland was your attention most peculiarly drawn?—Chiefly to ten counties of the south and west, Clare, Cork, Kerry, Galway, Leitrim, Limerick, Mayo, Roscommon, Sligo, and Tipperary.

Were you in correspondence with many persons of the greatest consideration in those counties?—With the respectable committees of each county, composed for the most part of persons of leading consideration.

Can you inform the Committee, upon what principles the relief administered through the agency of that committee was given?—It was very much the wish of the committee that it should be given for labour, as far as the same could be practicable; but it is to be presumed, that a very considerable portion of the funds that were remitted to Ireland, were, in the first instance, gratuitously given, in consequence of the weakness and incapacity of the people to labour.

Have you got the conditions of distribution which were put in circulation by that committee?—I have.

[The witness delivered in the same, which was read as follows:]

“RELIEF FOR IRELAND.

“Resolved,—That all remittances from this Committee be made in aid of local contribution for the distressed poor in Ireland.

“That the principles which this Committee recommend to those whom it may entrust with any portion of its funds are the following:—

“That provisions and seed potatoes be sold at prime cost, to such of the distressed poor as are capable of purchasing on those terms.

“That provisions and seed potatoes be sold at a reduced price, to such as are not capable of purchasing at prime cost.

“That payment by instalments be received from such distressed persons, as are unable to make any present payments, so that gratuitous assistance may be limited, as far as is practicable, to those who from special circumstances are unable to contribute to their own relief.

“Resolved, That all persons or public bodies receiving assistance from this Committee, be requested to state the amount of local contributions received, the number of persons assisted, and distinguishing those receiving gratuitous assistance from those purchasing at reduced prices or at prime cost.”

The principle of distribution being, that gratuitous assistance may be limited as far as practicable, to those who from special circumstances are unable to contribute to their own relief; can you state to the Committee, whether that was in most instances acted upon, or whether there were any distinct deviations from that regulation?—It was the constant direction of the committee, that that principle should be acted upon, and I have reason to believe that it was, as far as the circumstances of the case permitted.

Was there any district in the county of Clare, for instance, where the principle of gratuitous relief was adopted as the rule rather than the exception?—There was in one of the baronies of the county of Clare, the barony of Moyferty of Clare, in which, in the first instance, gratuitous relief was administered.

Was that administration of gratuitous relief productive of inconvenience?—So much inconvenience as to occasion a good deal of even remonstrance from persons who felt the danger to which it might lead.

Was it not also productive of inconvenience to the neighbouring districts, where labour was made the medium of relief?—I have no doubt that that was the effect.

In the correspondence which you have carried on in Ireland, what has been the general opinion stated to the committee, respecting the effects and tendency of gratuitous relief?—It has always been described to be of a most mischievous nature.

From the information which you have received, to what causes do you attribute the late distress in the ten counties in Ireland to which your evidence applies?—The leading cause which attracted the attention of the public, and of the committee in particular, was the deficiency in the potatoe crop, occasioned by the unusual wetness of the season.

Was

295

Was there any other cause?—The other great and leading cause was, the poverty of the country from the want of occupation and want of means of purchase.

Were there any districts in which, although the failure of crop took place, yet by reason of employ having been provided for a few of the people, the pressure of distress was alleviated?—Most assuredly, in a great many instances the employment neutralized the effects of that poverty.

Can you state generally, whether you consider the late distress to have arisen from any deficiency of food in the country, or from a deficiency on the part of the people of the means of purchasing food?—Certainly, the deficiency may be very safely and truly imputed to the want of means.

Do you consider, that at that time there were any circumstances connected with the condition of the higher ranks, which led to the reduction of the means of employing the poor in Ireland?—I believe that the distress was by no means confined to the lower classes, but that it reached the higher classes generally; it was also stated, that from want of employment, and from the scarcity of means to obtain food, such was the great and extreme distress of the poor in the western and south-western counties of Ireland, that they were almost wholly dependent for the subsistence on the county, of the more efficient, while from many concurrent causes, the latter class were themselves more than commonly straightened in their circumstances, and being compelled to contract their expenditure, they were unable to afford the usual means of profitable employment to the poor.

Having stated, that the late distress in Ireland arose less from the want of food than from the want of the means of purchasing food through productive industry and labour of the people, can you refer to any document which will illustrate that position?—I have one here; the following particulars of the state of the distressed districts came to the London Relief Committee early in May.

“Every article of provisions is very generally rising in price, but there is a very considerable part of our population that have no interest in their rise or fall, because in the said case, having no employment, they have no means of purchasing, at any price, subsistence for their families, and I much fear, that even in our best times, many of our poor perish, if not by direct starvation, by the effect of scanty, unwholesome and unnutritious diet; moreover, in these times of great depression, the gentry of the country who reside upon their estates, and are the natural guardians and supporters of the people, not duly receiving their rents, many, with the best disposition, have it not in their power to afford the relief which their duty and their feelings would dictate; in short, if it could be proved that provisions of all kinds were in plenty, and at very reduced prices, neither of which is now the case, still we should be in want.”

Can you inform the Committee, on whose authority that information has been given?—The Archbishop of Tuam.

Where is that dated?—In the early part of May, twelvemonth.

In what parts of the country do you consider the distress to be most urgent?—In situations near the sea, and in mountainous districts, remote districts.

Was it not felt, that there was great difficulty, from want of communications, in carrying relief or food to some of those districts?—Certainly.

Do those observations apply to the peninsulas which extend themselves into the Atlantic, Erris, Connemara, Iveragh, and the barony of Corcaguinny?—Yes.

Have you received from Connemara any strong representations of the then existing distress?—Some of the strongest that have reached the committee, have proceeded from that district.

On whose authority were many of these representations made?—A clergyman of the name of Seymour, the Rev. Charles Seymour, of Clifton; this is a letter which reached the committee, addressed to the Archbishop of Tuam.

Will you read an extract from it?—

“My Lord, I had the honour and pleasure of receiving your grace’s letter, enclosing a letter from the Liverpool Committee, with a donation of 50*l.* for the relief of our starving neighbours; it was very kind and good, but it will not do; effectual relief has not been given in some public works, and universal employment has been too long delayed; one poor creature who was employed by me last week to amuse, but not to fatigue himself, at the repairing of roads, was at work on Saturday evening, fasted I am afraid yesterday, Sunday, got up this morning, Monday, to work, not from bed, for bed he had none, but from the ground on which he slept, without bed-clothes, in his daily rags; he said he felt languid and sleepy, he was in fact getting worse, he lay down again on the ground and died; four have died in Buffin; and if swelled limbs, pale looks, sunk cheeks and hollow eyes, are the harbingers of death, the work of death would soon be very rapid

Mr.
Robert Pauncefoot.
(24 June.)

Mr.
Robert Pauncefoot.
(24 June.)

in this country. I have often witnessed scarcity and dearness of provisions, but I never had an idea of famine until now; next year will be in all probability as bad as this, the poor people of this barony at least will find it so; they are so weak they cannot work for themselves, because they have no food; they are not able to recover or re-mould their potatoes, and they do not like the cutting turf; as to the public works and general employment of the poor in this country, I fear it is almost too late, a few more days will incapacitate them for any thing of the kind; I dismissed this evening the three hundred men whom I had employed in the repairs of the road, I never witnessed such distress as my communication of not being able to give them another day's work occasioned; they said that a day or two more without employment, that is without food, would put an end to all their labours."

Do you receive similar communications from other places?—Yes.

Will you have the kindness to state to the Committee what communication you received from Sligo?—This is an extract of a letter from Sligo.

"We believe multitudes of objects remain yet undiscovered, and we fear that in another month, notwithstanding our utmost efforts, the aspect will be even worse than it is now: before their distress was published all the little furniture of their cabins had been sold, even to their only pot for boiling their provisions, and some within the last day or two have been discovered stealing for food the sea-weed, which had been carried to the fields as manure for potatoes; it is impossible to describe the admiration and gratitude which prevails throughout all classes of society here towards their English benefactors, indeed our only hope of any thing like effectual relief is in the liberality of British benevolence."

What was the agency that you chiefly employed in the administration of your relief in Ireland?—Central committees and local committees.

What individuals did you always connect with those?—The clergy of both persuasions.

Can you inform the Committee, whether, generally speaking, there was an active co-operation on the part of the clergy of both persuasions?—It appears so from their own statements, a great degree of cordiality prevailed amongst them.

Can you put the Committee in possession of any document which illustrates the anxiety of the clergy of either one or of both persuasions, to give full effect to the relief which they were made the agents of distributing?—This is a letter which reached the committee from the catholic bishop of Killaloe, addressed to his clergy.

"Dear Sir, you will mention from your altar on Sunday next, that Dr. O'Shaughnessy, R. C. bishop of Killaloe, requests that the pastors of the distressed districts of said diocese, should, at their respective chapels, excite their flocks to unite with the clergy in expressing their heartfelt and everlasting gratitude for the unexampled, necessary and timely relief, administered to them through the paternal influence of our beloved Sovereign, by the kind generosity of the government, and by the numerous donations of our benefactors in Ireland, but above all, by our truly charitable protestant benefactors and fellow subjects in England. This work of mercy originated with our generous and compassionate friends in England, by whose zeal and piety immense sums poured in on the London Tavern Committee of Management, by whose anxiety for our relief all possible means were adopted. Charity sermons, benefits of balls and theatres; and having tried all other measures, collections from door to door were resorted to with considerable success. In the history of the world, is there to be found an instance of such benevolent feelings as are now manifested? and by whom? by the illustrious English protestants, in favour of the destitute Roman catholics of Ireland. As the apprehension of famine must soon be done away by the prospect of an abundant harvest, this same great nation is turning its thoughts towards a supply of night and day covering for men, women and children of our half naked peasantry. Heavenly God! can our wretched poor people ever forget such kindness? (here let the congregation kneel down) therefore, with one heart and voice let us offer our fervent prayer to the throne of the Eternal God, humbly and earnestly beseeching him that every spiritual and temporal happiness and prosperity may be the reward of this unheard of munificence in favour of the destitute population of this unfortunate country."

Were there any attempts made by the local committees in Ireland, to provide for the cheap support of the poor, by applying an improved system of mechanical cooking apparatus, for the purpose of providing them with food?—There were some soup establishments founded in different parts of the country.

Can you furnish the Committee with an account of any of those establishments?—They were established under the management chiefly of Dr. Church, at Listhowell, in the county of Kerry, the results of which are very pleasing; I do not know whether I can furnish the Committee with that paper at the present moment.

At the close of the labours of the committee, was there any address made by them to the people of Ireland?—There was.

Will

297

Will you have the kindness to put in a copy of it?—That is the first address (*producing it*), and this is the second (*producing it*.)

Mr.
Robert Paunceforte.

(24 June.)

[*They were delivered in and read as follows:*]

“Address from the committee of the British subscription, to the peasantry in the distressed districts in Ireland.

“Brethren—The time is fast approaching, when our supplies will cease, when we of this committee must retire from the satisfaction of assisting you, and when, as we trust, the extraordinary distress which alone could justify our interference, will have been alleviated. We feel it to be, though almost the last, yet not the least act of kindness towards you, to apprize you a little before hand of the approach of this period; and to conjure you, if our advice can have any weight, or our affectionate entreaties any influence, to cultivate that spirit of industry which can best guard you against continued want or occasional distress, together with that spirit of order and good conduct which will invite new means of employment among you, will increase your comforts, and your resources, and (what we are persuaded will be a motive with your generous minds) will best reward the exertions of your friends. We will not attempt to tell you how your distresses have been felt in this country, how readily the British public, and many individuals in embarrassment themselves, have flown to assist them. But we may be permitted to assure you, that not the most suffering family or individual in any district has felt greater consolation in the relief afforded, than you have yourselves given to us, as often as we have heard of any of you preserved and comforted by our assistance. May God preserve and cherish you! may he give you the fruits of the earth and every other blessing in abundance, and may we your brethren and fellow subjects rejoice with you in your welfare, as we have sympathised in your distress.

For the committee,

City of London Tavern, }
August 9th, 1822. }

(signed) John Smith, Chairman.”

“Second Address.—From the Committee for managing the British subscription, to the peasantry of the distressed districts in Ireland.

“Brethren—The time is arrived when we must once more address you, and must inform you of the actual close of our subscription, for the approach of which we endeavoured to prepare you. No funds now remain at our disposal, and we intreat you, for your own sakes and for ours, not to deceive yourselves with the expectation of further supplies which cannot be sent, nor to wound us with representations of want which we should only have to lament our incapacity to relieve. The understanding and the feelings with which it has pleased God to bless you as a people, enable you to receive with advantage explanations always due to distress, and peculiarly so when they may tend to afford any satisfaction. The funds confided to us by a liberal and benevolent subscription were raised to relieve a pressing and extraordinary distress, to avert famine and all its sad attendants, and to restore you to your accustomed health and strength and habits of life. To aim at great improvements was beyond our reach; but it was our duty, for your sake, to take care that, as far as possible, relief should come to you through the medium of your own industry. After every call of distress has been by this committee diligently, and in due proportion to other sources of assistance, attended to, a sum has remained in our hand, that sum we have determined to assign to objects either immediately incidental to the late distress, or most likely (inasmuch as reviving or creating sources of employment can effect that purpose) in some degree to prevent you again experiencing the same sufferings. If success should follow these efforts, aided by your own exertions, the produce of your industry would increase your comforts, and would afford a resource whenever any disappointment in your own cultivation, or partial scarcity in your country should again occur; with this view we have anxiously weighed every mode of making the money in our hands subservient to the most pressing of your actual wants, and to your future welfare. We have selected the objects which have appeared most beneficial, and they have not been adopted without the concurrent and urgent recommendation of all your best friends, and our most respected advisers. Such are the principles on which we have endeavoured to conduct and conclude the business confided to us; but our sentiments towards you, our wishes for your happiness, as brethren and fellow subjects, do not terminate with the conclusion of our trusts. If you have interested the British people by your late severe distress, you have likewise endeared yourselves to them by your conduct under it; by your thankfulness to God for every measure of relief, by your reception of our endeavour to assist you, and by the many acts of good feeling and virtue which your distresses have called forth. And now comes our last word and our best wish: Farewell. May your welfare be increased by industry, by instruction and virtuous habits; may your genuine character of kindness, loyalty, and fortitude, continue to make you respected and beloved by your fellow-subjects, and may God bless you.

For the Committee,

City of London Tavern, }
August 31st 1822. }

(signed) John Smith, Chairman.”

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When

Mr.
Robert Paunceforte.

(24 June.)

When the distribution of money ceased, was there any sum still remaining unexpended?—A large balance on the 29th August, then estimated at 60,000*l*.

The Committee have been informed by another witness, that the distribution of that balance was arranged under a plan for the encouragement of the industry of the people through the means of loans; was that plan adopted after full consideration, and after consulting the best authorities within the reach of the committee?—It was.

Did the committee inquire into the effect of charitable loan societies in Ireland, as tending to promote the comforts of the people?—They took a great deal of pains to investigate that subject in Ireland.

What was the result of their inquiries?—They found that such establishments as had already been formed, had been very successful, in as much as they had been afforded without any loss.

Were there any statements made to the committee of the impediments which at present existed, to profitable employment of the people in domestic manufactures in Ireland?—Some impediments to the loan system were stated in some instances.

The question refers generally to the employment of the people; where there any statements made as to the want of implements among the people?—Certainly, very general.

Was that a very general subject of complaint?—Generally.

Was that combined with a statement of the great anxiety on the part of many people for employment?—Uniformly.

Was that combined with statements of great anxiety on the part of the people to become possessed of those implements of industry?—Certainly.

Did the committee receive any communications from the Bishop of Limerick on this subject, then Archdeacon Jebb?—They did, several communications.

Will you have the goodness to produce to the Committee copies of any of those letters?—Those are the two letters of the Bishop of Limerick.

[The witness delivered in the same, which were read as follows:]

“ Sir,

“ Abington Glebe, Limerick, July 26th 1822.

“ The two parishes of which this union consists are of considerable extent, the population redundant to excess, and the great landed proprietors altogether non-resident. Some of those proprietors have, indeed, been liberal in their contributions in the present emergency; but the amount of such contributions, in itself not very considerable, is by no means an adequate substitute for the advantages which might and would accrue from the continued, or even from the occasional residence of landlords. Through the bounty, however, of various public funds, in addition to private subscriptions, we have been enabled to extend relief to more than six hundred families, comprising considerably above three thousand souls; and, with the additional 100*l*. now to be applied from the donation entrusted by the committee to my disposal, I have hopes we may be able to continue our aid till, without any injurious consequences, the poor may enter on the consumption of the rising crops.

“ A plan has occurred to me, which I beg permission to submit for consideration. It seems desirable not merely to relieve present distress, but, so far as our ability extends, to prevent its future recurrence. Now in a country so much peopled as this, and without any thing like an adequate supply of agricultural employment, it is obvious that the great desideratum must be the introduction of some manufacture,—our great Irish staple manufacture, above all others. Now, though much cannot be directly done towards the effecting of this great object by the expenditure of 100*l*. it strikes me that indirectly, and as introductory to further exertion, that expenditure may be productive of incalculable advantage. What I would propose is, to procure and distribute a number of spinning-wheels, and a proportionate supply of reels: the very manufacturing of these articles, which should be carried on in this immediate district, or at all events within the county of Limerick, would in itself be most beneficial to several poor, industrious and deserving families. The wheels I would give exclusively to those (and they constitute a large proportion of our poor) who rent small portions of ground, in which they might grow flax; and each gift of a wheel I would accompany with a small quantity of flax-seed. The wheel, I am persuaded, ought in the present state of our population rarely, if ever, to be given without some such accompaniment. In the recently published “ Report of the Irish Board of Health” there is a very sensible observation by Lady Glengall, that it is of no use to give out wheels, as most of the trustees of the Linen Board do; for they are left idle three-fourths of the year for want, among the poor, of the means of buying flax; and also from having no market established for the sale of yarn. The latter objection is local: it does not altogether hold good in this country; and so far as it does, it might with due management be obviated. As to the former and more considerable of these difficulties, it may, I conceive, be met more advantageously by a gift of flax-seed than by a gift of flax: if flax be given, the poor will be made dependent on a similar gift from year to year; the gift being wholly gratuitous and complete, without exertion on the part of the poor, will call forth no activity to supply its failure. After a year or two, besides, the poor would be apt to consider it rather

Mr.
Robert Paunceforte.

(24 June.)

rather as a prescriptive right than as a voluntary favour; if it be at any time withheld they will too probably account themselves injured, and resent as a wrong the mere cessation of a bounty. But however this may be, the ceasing of the gift will imply the ceasing of their industry: not so where seed is supplied to them; in this case the gift is mingled with their own labour, and without that labour would be wholly unproductive. They are thus induced to contribute so much from themselves to the preparation of the article, that in the next year the application of a part of their earnings to purchase flax-seed will be felt as a very slight additional expense; such a gift will stimulate instead of supersede the industry and enterprize of the male cottager, while it will go less directly, but more powerfully and more permanently than the supply of grown flax, to feed the spinning-wheel of the female. This to me appears a very important consideration: in Ireland we have much of the helplessness of despondency, and the nicety is to afford just sufficient stimulus to excite hope without superseding labour, and by exciting hope, to implant habits of cheerful activity. No mistake, I conceive, can be practically more mischievous than the benevolent error of bestowing (except in cases of extended calamity and want, which like the present emergency speak for themselves) the direct rather than the indirect assistance, the manufactured rather than the raw materials of comfort, or even of industrious employment. A shilling earned by honest self-exertion is better than a guinea gratuitously bestowed: the latter indeed, instead of a benefit, is most commonly a serious injury; and what I say of money I would say (except in rare and peculiar cases) of meat, drink and raiment: it is surely better to give people the means of supplying their own wants than to supply those wants for them. To say the very least, the latter mode has no progress in it; what we give to-day we must give to-morrow, and so on *ad infinitum*: food and blankets and fuel will not generate wheels, but wheels will generate fuel, blankets and food.

"Several ladies of my acquaintance have given out flax to be spun at a daily hire, and have themselves afterwards disposed of the manufactured yarn. This has usually been a great temporary advantage to the poor of their neighbourhoods, but it contains not the seeds of any lasting and general improvement of the condition of our poor. On the contrary the plan has within it the materials of its own destruction; the yarn so manufactured is commonly sold at a loss, and the benevolence even of the most benevolent is so tired out by a continuance of this losing trade, that it seeks other and more promising channels in which to move, and the poor are in the end left in a worse condition than that in which they were found; the truth is, the poor work heartlessly in all factitious employments, they work their best only when they work for themselves and of themselves; the gift of a wheel and the gift of a small portion of flax-seed will engage a poor family in industry, and that labour which to a benevolent lady patroness, would be worse than unproductive, will to the cottager be a source of sure, though at the commencement, and till some dexterity has been acquired, of small profit, still however not so small as to preclude a continuance of the labour from whence it was derived, while the increase of gain arising from increase of skill will be a growing stimulus to increase of industry. I would, however, be far from discouraging the helping hand of the rich in the progress of this industry. In the report already cited, Lady Glengall insists much, and justly, on the importance and utility of spinning schools in this parish, the present means are wanting to form such an establishment; but we have other, and perhaps superior, advantages which seem to indicate this as a most suitable place for the commencement of a limited experimental plan. Some years ago the Chamber of Commerce of the city of Limerick, built here a very complete scutching-mill, with two comfortable slated houses, the one a residence for the conductor of the mill, the other a storehouse for the reception of flax; both mill and houses however, are at present, and for some time have been, unfortunately idle; the funds of the Chamber of Commerce not enabling them to pay a sufficient salary to a properly qualified superintendent. These buildings, however inefficient just now, may, I conceive, become the foundation of much future good: if by any means the Chamber of Commerce were enabled to transplant and support an industrious and intelligent family from the north of Ireland, possessing the necessary skill and experience, the husband might superintend the scutching-mill, and the wife might be a spinning mistress to the female children and young women of the parish; a small sum to defray the expense of premiums, in wheels and flax-seed to the best spinners, would be a great additional advantage; on this point I speak with difficulty, but as the thought has occurred I dare not venture to suppress it, and relying on the indulgence of the Committee I throw it out for consideration, whether, if there should remain, after providing for the present exigencies of the Irish poor, any overplus of their funds, a portion of that surplus might not be most beneficially employed in some such manner as I have taken the liberty of suggesting. The fitness of Abington for an experiment of this kind appears, as I have already intimated, from the existence here of an apparatus which needs only a little money to set it and keep it at work; on other grounds too, it possesses a recommendation which has already operated largely in its favour. The Committee have been induced, as they kindly say, by certain public statements, to think well of my humble exertions, but those exertions would assuredly have been of little avail, had they not been met, or I might more truly say elicited, by the good dispositions and good conduct of my poor parishioners; in apportioning therefore the present bounty of the Committee I shall take the liberty of stating, that it comes from London as a special token of approbation, and as a reward for the exemplary peaceableness of the people of Abington, and I am confident this simple statement will go far towards perpetuating and extending the spirit which now happily prevails among us; the value of such a spirit, the events of every day are teaching

Mr.
Robert Pauncefoot.

(24 June.)

me to prize more deeply. In other and neighbouring parishes the worst outrages were in the course of last winter repeatedly perpetrated, and the unhappy dispositions which dictated those outrages, are I am sorry to say, by no means worn out; for such a time it is much to have the population of a large district, ready and willing to support the laws and keep out bad intruders. During the last winter the services in this way of the parishioners of Abington were invaluable; bordering upon, and in part embracing a chain of mountains which separates the counties of Limerick and Tipperary, which abounds in fastnesses and impenetrable retreats, and which opens to the public disturber a communication with the most inflammable parts of the county of Tipperary, this parish may be said to have stood between the living and the dead, and staid the plague; such services, I humbly think, have fairly earned the peculiar distinction shown by the London Committee, and if I am permitted to dispose of the remaining 100*l.* in the distribution of wheels and flax-seed, I conceive it may be so done as to make a lasting and most salutary impression. The simultaneous dispersion of so many implements of industry, an event unprecedented in the annals of the parish, will powerfully impress our most impressible people, and when they are led to regard this bounty as the reward of good conduct known and approved at a distance, they will be influenced by it an hundred fold; so long as the wheels remain (and this will, in many cases be for twenty or thirty years) the fact cannot be forgotten, but the tradition of it will remain much longer, and it may not be unreasonable to suppose this tradition will carry down with it the germs of loyalty and gratitude to generations yet unborn. Thus much for the disposal of the money so kindly placed in my hands; as to the larger scheme it may, perhaps, be within the power of the London Committee, before they close their valuable and most benevolent labours, to lay the first solid foundation of the linen manufacture in the south of Ireland.

I have the honour to be Sir,
Your most obedient and most humble servant,

John Jebb."

"Sir,

"Abington Glebe, Limerick, 2d September 1822.

"Your most obliging favour of the 19th ultimo was one, in common justice to the object which the London Committee has at heart, not to be answered hastily, mean time the subject has not been out of my thoughts, and by making inquiries in various quarters, I have tried to obtain the best information to be had.

"Your letter embraces three inquiries: 1st. Whether it may be in my power to extend more widely my plans for furnishing employment, upon receiving further aid for that purpose? 2d. Whether I can favour the committee with the names of any friends of mine who would undertake to carry similar measures into beneficial execution? 3d. Whether I can afford any advice respecting the principle and mode of applying the balance in the hands of the London Committee in the most useful manner?

"1st. To the first inquiry, I beg leave to answer, that, while most anxious to co-operate with, or rather to act under, the London Committee, I am apprehensive that, in attempting to widen my sphere, I might only diminish my usefulness; that, in the effort to do too much, I might do all badly; and on this principle I should not feel justified in undertaking any extension of my plans beyond the parish in which I live, which is a very large one.

"2d. I have in some degree anticipated my answer to the second question. Those who are best fitted to promote industry and manufacture, especially in their respective neighbourhoods, will, I conceive, be brought into action most beneficially through the agency of some constituted authority, to whom they shall be responsible for the detail of their proceedings; such, for example, as the newly established 'County of Limerick Agricultural Society.'

"3d. I shall now endeavour to offer those suggestions which have occurred to me respecting the principle and mode of applying the balance in the hands of the London Committee to the best advantage.

"The principle, I think, should be to do at once the most permanent and the most extended good in your power. Now that alone, in aiding the population of a country, is permanent good which will encourage and gradually enable them, by honest industry, to provide for themselves; and on this principle (except in cases of urgent calamity like the occasion which called forth the unexampled liberality of England this year) gifts of money, of food, of clothing, are, I conceive, to be deprecated, especially where the Irish are concerned, in whom it should be our great object to elicit and cherish, what from long mismanagement is deplorably wanting amongst us, a spirit of independence. And again, that only can be extended good which is administered by those who can raise themselves above party interests, and feel for the welfare of a community, instead of giving themselves to a system of local petty jobbing. The attention of the county of Limerick Agricultural Society, I find, is particularly directed to encourage the growth of flax, the spinning of yarn, and the manufacture of linen; and they will, I presume, be the best instrumental agents for diffusing the disposable bounty of the London Committee in the manner best calculated to promote the increase of industry among our peasantry.

"But with a view both to permanent and extended benefit, I have an additional plan to suggest, which I am sure the committee, whether they shall adopt it or not, will receive with their wonted indulgence. It does not seem to me enough that aid towards the purchase of flax, flax-seed, spinning, and weaving implements, &c. &c. should be distributed through

301
Mr.
Robert Pauncefoot.

(24 June.)

through the different parishes of this country. To introduce a new manufacture, which, to all intents and purposes, the linen manufacture here is, we want, in some one or more places of the county, an establishment that would be at once experimental and exemplary; experimental to ascertain the best mode of manufacturing, exemplary to exhibit the beneficial effects of that mode, and gradually to induce and extend its adoption throughout this country in particular, and the south of Ireland in general; such an establishment I will endeavour slightly to sketch, preparing my way by a few introductory observations.

"It is notorious that the arts both of spinning and weaving are in this country at a very low ebb; a northern spinner can perform in a far better style three times the quantity of work that a southern spinner can; the proportion between the performance of northern and southern weavers may be taken pretty nearly at the same rate. This is the general testimony of the lower orders themselves; I have ascertained it by repeated inquiry, and the testimony is the more remarkable, as the force of prejudice and attachment to old and bad habits, are in this part of Munster particularly strong. Again, in preparing flax by the operation of scutching, the peasantry hereabouts are very unskilful; while, if their skill were ever so great, it is generally known and felt that the operation cannot be performed so effectually by hand as by machinery. Flax scutched in the mill manufactures more fairly under the hackle, affords a greater produce of available material, and that material regularly sells for 1 s. per stone more in the market, than flax scutched by hand. This is the general voice of the country.

"Now, putting these facts together, it follows as a consequence, that the introduction of scutching-mills, of spinning schools, and of weaving schools, is indispensable in order to bring the south to the level of the north in the article of the linen manufacture. And it seems most desirable that in some one or more places an establishment embracing all those objects should be set on foot, by the way at once of experiment and example. If, then, the London committee agree with me, and if their surplus funds allow of it, I would respectively propose to them the formation of such an establishment in this parish.

"In a former letter, I mentioned that the Limerick Chamber of Commerce has built a scutching-mill, dwelling-house for the miller, store-house, &c. in this parish of Abington. This establishment is, I find, now proceeding tolerably well, and with some further pecuniary aid, and especially with a proper local superintendence and control, it might be rendered most extensively useful. The miller should have an increased salary, and for a time at least, the price of scutching should be reduced to the people. The spinning school and experimental weaving establishment might be carried on with more advantage apart from the scutching concern; and there happens to be a large building admirably adapted for both purposes, which might either be purchased for a moderate sum, or taken for a term of years at a small annual rent. To this parish and this building, had we sufficient funds, I should wish to bring a northern family of good character, industrious habits, and ascertained skill, and experience. The husband should be a weaver, and should have five or six looms constantly employed, hiring as journeymen, and successively so as to diffuse the art, the young weavers of this country, whom he might institute in the most approved northern modes. The wife and daughters of this man should be expert spinners, of good temper, and popular manners, and these I would employ as the conductresses of a spinning school; nor have I a doubt, that in various other respects besides spinning, in the introduction of cleanliness, order, decency and generally improved habits, such a family might become a blessing to this country. The house to which I allude is large and lofty, and would readily admit the divisions necessary to keep the spinning and weaving departments altogether distinct and separate.

"The matter of finance, the most important of all, now comes to be considered. In the first place then, I have reason to believe, that the Chamber of Commerce would liberally come forward, would first make over their concern to proper trustees, and then contribute a sum annually to the support of the institution; as to further supplies I could wish provision to be made for permanence. It is a notorious failing of my countrymen, that they undertake with spirit indeed, but seldom persevere. And the funds, which at the commencement of any plausible scheme, are apt enough to overflow, are too soon dried up; to guard against this, if the committee could allocate for the permanent support of the proposed establishment 8,000 l. the interest of that sum would, without touching on the capital, amply suffice, not only for carrying on the mill and the schools, but also, for providing premiums for the best spinners and weavers; one important and indeed indispensable part of the plan, which I had almost omitted; the premiums to be given, not in money but in flax-seed, flax-wheels, and, occasionally, looms.

"As to the management, I would place it in the hands of a body of trustees, such as the president, and some one leading member of the Chamber of Commerce; and General Bourke, whose assistance in all such matters is invaluable; I should also beg to propose myself, and my friend and co-adjutor in this parish, Mr. Forsler, as trustees for life. We may not be permanently ministers of Abington, but our attachment to it, and interest in its welfare can cease only with our lives.

"It is not the least advantage derivable from the plan which I propose for consideration, that the trustees by themselves and through a confidential agent, might continually inspect the progress of spinning and weaving, and growing and dressing flax throughout this parish; and by the patronage and rewards in their disposal, might afford a powerful stimulus to industry, neatness, good order, and thereby to that improved moral tone which is the invariable result of such habits.

Mr.
Robert Pauncefote.

(24 June.)

"Such a plan would, I confidently trust, be at once experimental and exemplary, would show what is attainable, and would induce others to press forward towards the attainment.

"The sum of 3,000*l.* I grant is large, and the amount would unquestionably be too great if it were allotted for the advantage only of a single parish: it is, however, to be considered, that the benefits of the scutching-mill, even in its present less improved condition, are extended to a great distance; flax is already brought to this mill from places, ten, fifteen and twenty miles distant; and what I consider yet more important, is the indirect and incalculably progressive benefit derivable to the whole country, perhaps even the province, from the example of one plan, in which improved modes of manufacture may be successfully adopted.

"More on this subject I will not add, than that I shall await respectfully, but not without a deep and lively interest, the decision of your benevolent and enlightened committee.

"It is but right for me to say, that the people of this country are overflowing with gratitude to their English fellow-subjects. More I trust has been done in this single year than in past centuries towards a real union of the countries. One little anecdote I will mention:—My friend, Mr. Forster, in a ride the other morning, fell in with a party of our peasants: one man said, 'but for the English the people would have perished in the ditches, and we should now have a plague in the country;' another, a venerable old man, then calmly, but with a profound emotion, said, 'God bless them for their goodness!' and after a short pause added, 'and he will bless them:' these are the very words, and this is but a fair specimen of the prevalent feeling.

"It is perhaps too obvious to be mentioned, and yet it is so important that I cannot help intreating attention to the fact, that by the disposal of 3,000*l.* so much money will be preserved in perpetuity for the furtherance of any other good purpose hereafter, whether this should fail, or whether, as it is rather hoped, it should be so effectually answered as to supersede the necessity of any factitious aid to manufactures in this parish."

Did the committee receive any information upon the state of the poor in the county Galway, from Dr. Trench?—They did.

Have you got a copy of that communication?—I have.

Will you have the goodness to put it in?

[It was delivered in, and read as follows:]

(Copy.)

"Macknay, near Ballinasloe, Ireland, July 4th 1822.

"Sir,—I was in Dublin when your letter arrived, covering 50*l.* for the poor of Taughmaconnel; I now acknowledge the receipt. Be pleased to carry our gratitude to the committee for the various and valuable tokens of their benevolence which we have received, and I am bound to express mine in particular, for the confidence which the committee has been pleased to repose in me. It may be pleasing for you to hear that my brother, Sir Robert Trench, has come down here on leave of absence from his regiment, and has taken upon himself the superintendence of the public works which we have undertaken in order to afford employment to the poor. It may be also satisfactory for you to learn, that this market, and that of Banagher, Athlone and Loughrea, continue to be plentifully supplied with the necessities of life, especially oatmeal, which may average at 15*s.* 6*d.* per cwt. of 112 lbs. The same opinion that I expressed early in the spring to Mr. Robert Stephen, an active member of the London Hibernian Society, who courted my opinion on the state of provision within the country, that same opinion I now repeat, that there is food enough for the year; the poor man's potatoe crop was short, and from thence proceeds this wretchedness which pervades the west and south. If there was any steady employment for the vast quantity of surplus labour we possess, the loss or diminution of the potatoe crop would have been comparatively disregarded: it is employment we want and not provision; felt this year, locally, more than other years, because the poor man's own resource was prematurely exhausted. But, sir, allow me to detain you for an instant, and to fix your attention to the source of our misfortunes. You have, 'ministered to our necessities and yet do minister' 100,000*l.* an enormous sum!!! 'may the blessing of him who is ready to perish come upon you!' for so doing; but do, sir, persuade your committee (as a matter if not of utility at least of curious investigation) to take Ireland, county by county, and put down on paper the quantity of absentee property which goes from this island year by year and every year, and never, never returns!!! There is an increasing list of thousands, every man going that can gather 100*l.* and leaving us to beggary and want. Sir, there is not a country in the habitable globe that could have existed so long, as a skeleton whose vitals and blood have been drawn off, as this wretched kingdom; we can stand it no longer: with all our rebellions and turbulence, there is not so patient a population in the world; England would not have borne for one week what we have borne for eight hundred years! If then you will take us, as a speculator or capitalist would take a very bad concern, and expend your money upon us, to lift us from this state of exhaustion and debility, in which we lie fainting, impoverished and undone: if you will be our nursing fathers and our nursing mothers, to foster and feed us, in time we may revive, and be grateful and bless you; but there is no alternative, you have taken all we had and have expended it amongst you: 'the whole head is sick, and the whole heart is faint;' we can give no more!!! What country could live and be in health, with her substance taken from her

her and never returning; could England have borne it? could Scotland? No, certainly not! ill-fated Ireland alone could be deemed capable of producing such an anomaly. Pardon me, sir, I have done.

Your very obedient servant,

(signed) "C. Le P. Trench."

Mr.
Robert Pauncefoot.

(24 June.)

Have you also a letter from General Bourke on the same subject?—I have.

[*The witness delivered in the same, which was read as follows:*]

* Copy of a Letter from Major General Richard Bourke, dated Limerick, August 8th, 1822.

"Sir,—I have the honour to acknowledge the receipt of your letter of the third instant, which I laid before this committee. They have received with the greatest pleasure, the assurances it contains, that the arrangements adopted by them, have been satisfactory to the committee of London. But I beg to observe, that neither to myself as an individual, nor to this committee as a body, are any thanks due for the part we have taken in the relief of our suffering countrymen. It would have been extraordinary, if, when the whole English nation stretched forth their hands to relieve us, and when a committee, composed of such eminent persons, devoted their valuable time to administer to our necessities, it would have been strange indeed, if any co-operation in this charitable deed had been wanting on our side.

"This committee duly appreciate the benevolent spirit which dictated the letter I am directed to reply to, and they will thankfully receive from their English benefactors the means of affording some increase of comfort to the very miserable peasantry of this country. If during the late period of distress, the contributions from England have been thrown into one common stock with those of the Irish government, neither this committee, nor the sufferers who have been relieved, have failed to distinguish between the spontaneous efforts of private benevolence, and the duty which every government owes to the people, who have entrusted their affairs to its management.

"On the mode in which the benevolent intentions of your committee can most advantageously be carried into effect, and some increase of comfort, some permanent advantage be procured for the inhabitants of those districts where distress has so lately been exhibited in its most alarming form; I have, in compliance with your wishes, to offer the following remarks.

"The subject is one of no small difficulty; and, after much consideration, this committee has directed me to state their opinion, that the employment of the poor, by the encouragement of some manufacture, offers the fairest chance of immediate as well as future benefit. The linen manufacture is obviously that which should meet with this encouragement. Our local knowledge enables us to point out the mode of affording it. The offer of a bounty, however considerable, would probably not have the desired effect, at least no immediate effect: to relieve the ignorant and desponding peasantry of this country, it will be necessary to conduct them step by step; to supply the spinners with wheels and flax, and to take from them the thread as fast as it is spun; paying them immediately the price of their labour. In this way, and in no other, (for sometime at least) will they be brought to work: but in a family where there are one or two spinners, the weekly receipt from 6d. to 1s. and 6d. will not only procure a considerable increase of comfort to the industrious of this poor country, but will induce the idle and profligate to turn to a better course of life. To effect this mode of relieving and bettering the poor, it is obviously necessary to appoint one or two charitable persons in every parish or district, to give out the wheels and flax, and to receive the thread and pay for it when spun. This thread if not sold to weavers in the immediate neighbourhood of its production, may be sent to the linen hall in Limerick, where it will meet a market. The amount received for thread is to be immediately re-invested in flax, to be given out and manufactured as before. Here it may be necessary to state, what I have discovered by experience, that in order to give sufficient encouragement to the spinner, some loss will be incurred in this traffic. I have, since Christmas last, employed from fifty to seventy spinners in the manner pointed out; and though the price I have paid for spinning, has not been more than sufficient to produce 3d. per day to a good spinner, giving up her whole day to it; or more than half that to the mother of a family, much of whose time is otherwise occupied, yet I have incurred a loss of full seven per cent by the trade; or in other words, when I have received 100l. for thread sold at the linen hall, the raw material and manufacture have cost me 107l. This loss in the infancy of the manufacture is not surprising, when the women shall have attained greater proficiency in the art, they will be able to produce a greater quantity of thread daily, so as to increase their gains and the profit of their employer; and when the manufacture shall have reached this degree of perfection, it may then be advisable to withdraw all factitious aid, and leave the business to its natural course.

"The London committee will perceive, that I have carried the manufacture no further than the production of thread. It would be too troublesome and too hazardous a speculation, to employ weavers in the same manner it is proposed to do with spinners. But the best informed merchants assure us, that let the thread be produced in what quantities it may, a sale will always be found for it, and the looms kept at work in weaving it.

"I have thought it necessary to trouble you with this long detail, as the subject may be new to the London committee, and further, to show them that we have considered the matter in all its bearings. It remains to state, the amount of assistance which may be required to carry this project into effect generally through the country. We have calculated that the sum of 2,500l. will enable this committee to set above two thousand new wheels at work, and to provide flax for many of those idle for want of this encouragement. In this is included a sum for reels and hackles, and for providing a few looms in those districts where they may

Mr.
Robert Pauncefoot.

(24 June.)

be wanting. All these implements (hackles excepted) can be made up here with advantage; the wheels at 7s. each, the reels at 10s. 6d. looms at 3l. 10s. Flax will probably be bought through the season, at an average of 5s. the stone of 14lbs. The knowledge which this committee have obtained of the characters and dispositions of the several local committees of the county, by the active correspondence they have lately kept up through its whole extent, will enable them to select proper persons, to manage and promote this project for the encouragement and manufacture of thread in their respective districts; nor do they despair of obtaining (in some places at least) some pecuniary assistance to the undertaking.

"It will, perhaps, be proper to state to the London committee, that the promotion of industry, and the improvement of agriculture and manufactures in the county, are the objects for which this committee was originally appointed early in the month of May last. The relief of the poor in the late trying season, was subsequently entrusted to our care, and has totally occupied our time. It will be most gratifying to us, to be enabled to turn our efforts towards the ends of our original institution; and with a power of promoting them, which we could never have hoped to obtain from the unassisted subscriptions of our resident and absentee gentry.

"As the London Committee may have heard of the Linen Board of Ireland, it is necessary to state, that except by the recommendation which we understand was made to Government to distribute one thousand barrels of flax-seed gratis, in this and the neighbouring counties at a late period of the season, this county has, in the memory of the committee, received no benefit from the institution. The trustees are all persons of ministerial appointment, and it has not happened that a single trustee has been selected from the inhabitants of this county, so that it has remained friendless and unassisted.

"With respect to the clothing which it is probable will be placed at the disposal of the London committee, the distribution of some of the coarser and warmer articles would be of incalculable benefit to many of our poor. In another way also clothing may be obtained for many of those, now in great want of it, and at no very expensive rate. When the distress occasioned by the failure of the potatoe crop, was beginning to be felt in the last spring, many persons pawned the articles of dress, least necessary, in warm weather, and even their bed clothes to procure present subsistence; it is to be feared many of these poor creatures will never be able to redeem the pledged property, in such cases to recover it for the unhappy proprietor would be an act of most useful charity.

"The manufacture for home consumption of coarse woollen frize for men, and flannel for women's petticoats, was until lately, very flourishing in this county; old clothes imported from London, have unhappily, superseded the use of this warm and decent frize, and given to our peasants in the neighbourhood of Limerick, in their flimsy and fashionable habiliments the appearance of pickpockets or servants out of place. If the committee had the means they would willingly endeavour, by a small bounty, to revive the manufacture of frize, and beat the old clothes out of the market.

"I have to apologize for the length to which this letter has extended; I have been anxious to give the committee the fullest information on the points referred; if I have omitted any thing they may desire to know, I shall feel happy in being able to satisfy their future inquiries."

Were there any statements made to the committee of the successful efforts on the part of any private individuals, in improving the condition of the people by enlarging their means of employment; the question refers now to the counties of Roscommon and Mayo?—Several communications were received from individuals which proved of advantage, they recommend attention to the state of the poor, by affording them means of employment.

Who are they from in Roscommon?—Mrs. Stickland, from Roscommon.

Can you furnish the Committee with the details of the plan which was successfully adopted by Mrs. Stickland, in affording industrious occupation to the people?—I have it here.

[The witness delivered in the same, which was read as follows:]

"From a Lady residing in the County of Mayo, November 1st 1822.

"I came to Ireland the end of July 1818, the people were then recovering the distress and disease of the two preceding years, but fever still prevailed to a great extent; the quantity of beggars besieging the hall door, and swarming in the passages and offices was quite a nuisance, and every thing stolen they could lay their hands upon; this obliged me to exert myself to provide for them by other means than giving charity, I began with getting a list of all persons belonging to the estate from the parish priest, and then bought flax, and offered spinning to all asking relief; by this means, I soon knew the regular and habitual beggars from those having houses and a little land, whose distress was accidental; with very few exceptions (not above five or six) I found all willing to work, if work could by any means support them, and the number of my spinners soon became numerous, and in December amounted to above eighty. Still sickness prevailed, and all I could do was very inadequate to the relief required; but none died of fever after my arrival. The following spring Mr. S. succeeded in establishing a dispensary, and I was then able to refuse all relief to beggars, and in a very short time none came to the house; every thing I could spare of milk, broth, &c. I gave regularly twice a week to all the poor spinners, and by giving

Mr.
Robert Pauncefoot.
(24 June.)

giving every thing myself, and assembling all at the same hour, prevented imposition almost entirely. In the spring Mr. S. wished to break up about four acres of coarse grass, and it was portioned among the poorest, rent free, particularly widows who had been compelled by distress to abandon their holdings. I think this was of great use, and settled many; those who had no residence of their own, were assisted in the course of the summer in building cabins; and by the beginning of the next winter many families I had found begging, without a home, had cabins, and potatoes, and earned from 1s. to 2s. a week by spinning, besides what their boys could do. Mr. S. the first spring (1819) sowed three acres of flax for me, which enabled me to give spinning at less loss, and I saved the seed of about half an acre. In January 1820, I was able to begin a girls free school on a very small scale at first, for I began with twenty girls, of whom very few knew their letters, or had ever touched a needle; some of twelve or thirteen years could not say a prayer in any language, and there was certainly a great prejudice against the school, excited, I believe, by the village schoolmasters; this wore off rapidly, and though the country was very much disturbed immediately about us the winter of 1820 and 1821, I found the spinning and school go on perfectly, and both succeeded in every way. The produce of ten acres of flax was spun in the course of the winter and following summer, and in three months I had fifty girls in the school, and have now ninety, and might have two or three times as many if I had room for them, for I have applications almost daily. Mr. S. sowed flax-seed saved from the flax he grew for my spinners, and it produced a remarkably fine crop; and ever since he has saved the greatest part of the seed, stacking the flax, and threshing and bogging it in March. I find it a much greater charity to give spinning from March to August than during the winter half-year, and though I give it all the year round, I insist on all the unmarried girls, whose mothers spin for me, going to service during the three winter months, when all can get service who are good spinners, and have a wheel. Potatoes are plentiful November, December and January, and the flax is spun and the yarn sold as quickly as possible to make up the January rents, so that the abundance of food and the press of work makes every one hire a spinner for the quarter that can possibly afford it. The girl is expected to spin a hank a day, and to use her own wheel. Mr. S. for the last three years, has bought Dutch flax-seed, and retailed it to the people at prime cost, giving time to those he could trust. It comes higher than the Riga and American seed sold in the market, but the people prefer it. The flax-seed saved from the Dutch seed they prefer to what they can buy in the markets, and it has always produced a better crop. Mr. S. has sown Dutch seed and seed of his own ripening in the same ground, the same year, and his produced quite as fine flax in every respect; he has never sold or sowed seed ripened from any but Dutch seed; the seed is said to degenerate, but we have never tried it beyond the first year; allowing the seed to ripen certainly does not injure the flax for "two-hank yarn," the staple of this part of Ireland, whatever it may do for finer yarn; nor do I find the return from the scutcher and hackler diminished, if both take proper pains. The greatest trouble I have had is in preventing the habitual impositions of the spinners; almost all, at first, brushed, or at least rubbed their yarn with a wet cloth whilst on the reel. This practice is encouraged by the yarn buyers, who buy up a great deal of yarn at the cabin doors, and contrive to dispose of it without its being exposed publicly for sale; both these practices are contrary to law, but are connived at by the inspectors. The fraudulency of the Connaught yarn is notorious, and certainly a serious injury to the people. The cheat in the reeling, in the size of the reels even, and by brushing the yarn. By attending to these particulars, and to having the thread sufficiently twisted, I hardly lose any thing by the spinning; the chief part of the loss is in weaving. Mr. S. calculated the prime cost of the hackled flax to be 6d. per lb. long and tear flax valued together; this is charging the prime cost of seed, the highest conacre rent for land, and every sort of labour used in the production of the article; the value of the second scutching tow and hackling tow are deducted. The market price of hackled flax is from 7d. to 9d. a lb.; say 8d. as an average this year and last: I pay 4d. a lb. for spinning, and have always got 10d. a lb. for my yarn, generally 11½d. and sometimes as high as 14d. The barony of Costello abounds with poor weavers, who, I believe, about fifteen years ago, emigrated from the north of Ireland to this estate, and were encouraged to settle by the late landlord. The weavers generally do their work much better than the spinners; but the value of labour is so small they cannot support themselves, and the greater part have no capital to purchase yarn. The sort of work that pays the best, is what is called Sligo webs; two-hank (or sometimes mixed yarn) wove into pieces fifty-two yards long and seven-eighths wide; fifty-three hanks usually make something more than fifty-two yards, but not more than ensures the right measure; for every weaver does not give exactly the same return of measure. If the work is good, I get 9d. a yard for these webs: the ashes to boil the yarn for each web cost 1s. 8d.; the account would stand thus:

	£.	s.	d.
Fifty-three hanks at 5d. per hank, or 10d. per lb.	-	-	1 2 1
Ashes	-	-	1 8
Weaving	-	-	15 -
			£. 1 18 9
Fifty-two yards at 9d. per yard	-	-	1 19 -
			£. - - 3

Mr.
Robert Pauncefote.

(24 June.)

I now take in yarn, pay for the spinning it, give out fresh flax, and take in and pay for the weaving of webs, and give out fresh yarn to the weavers once a week. I have about thirty weavers employed; and this year have had, the greatest part of the summer, as many as one hundred and twenty spinners; but usually about eighty. It does not occupy above six hours to do all this: the weavers count the threads in one cut of one hank of the yarn brought by each spinner; each spinner's yarn is weighed before all present, and any deficiency of weight declared, and any one doubting it allowed to examine it; each hank I examine myself, and if I think it uneven, or not well twisted or brushed, give it to the weavers to decide upon: by running my eye over every hank myself I can detect any error in the reeling; and by calling on the weavers to decide, I avoid any imputation of partiality or unnecessary strictness. As the weavers are to manufacture the yarn themselves, it is their interest not to pass bad. Each spinner sees the bundle of flax weighed before she takes it, and if there is the least dispute, I always have it weighed over again to satisfy her, provided the objection is made before she leaves the room. I have a table ruled for keeping the accounts, which facilitates the business very much: the name of the spinner and her place of residence are entered in the first column, the weight given her in the next, the price per lb. in the next, and the sum earned entered when the yarn is returned and the money paid her. Thus:

Name.	Residence.	Friday, September 27.			Friday, October 4.		
		Quantity.	Rate per lb.	Price paid.	Quantity.	Rate per lb.	Price paid.
			d.	s. d.		d.	s. d.
B. Seally -	Driney -	3 lbs. -	4	1 -	3 lbs. -	4	-
M. Kenny -	Orm -	4 - -	4	1 4	4 - -	4	1 4
W. Tarpy -	Moyne -	6 tow -	2	1 -	6 tow -	2	-
Cath. Fraine	Ballyglass -	6 - -	4	2 -	6 - -	4	2 -

The table I have given a sketch of, but it should be on large paper, so as to contain space for eight weeks in breadth, and for all the spinners names in length; and I call over the names, and take the yarn of each and pay her, &c. and dismiss her, in the order in which she stands in the list. By means of this table I can instantly see when the flax was given, and who has not returned the yarn punctually. I have been thus particular, because it was not possible for any one to be more ignorant of all concerning spinning, and the manufacture of linen, than I was at first; and I think in few places could there be more beggars, and poor habitually idle and accustomed to live by hanging about the 'great house,' than we found here; and because I am certain any one might do all that I have done with less trouble than they would believe, when once the people are got into a right way, and the thing regularly in train. Now you do not see a beggar for weeks together; and I should think at least fifty families are almost entirely supported by the spinning, who would otherwise be begging all or at least the greatest part of the year. The only charity I have found do good to professional beggars is, taking their children when about twelve years old, and clothing them and binding them for a year; the few shillings (from 5s. to 8s.) their master agrees to give as yearly wages, I make him engage in writing to pay into the hands of a third person, approved of by all parties, to prevent the parents of the child getting it: at the end of the year I take the money and new clothe the child, and bind him for another year; in three years he is, if he is good for any thing and healthy, able to earn wages enough to pay for his own clothing, and I then leave him to himself. I have uniformly found beggars eager to get their children so disposed of, and the children glad to leave off begging, though not always steady to remaining a year in the same service without being threatened with the interference of a magistrate. Where there is a relation willing to take a child, I prefer him, and always leave the boy to choose his own master. I know no charity that would be more extensively useful than giving wheels to young girls going to service, and next to this lending wheels gratis: the wheels should be lent only till asked for again, and at least once a year should be all brought back and inspected and repaired. The makers of wheels and reels engage to keep both in repair gratis for three years. I find the children in the schools, both in the boys' and the girls', much more docile, and every way easier to teach, than any poor children I ever saw in England; and much more thankful and anxious for instruction, now that the prejudice against us as strangers is worn off: the girls soon learn to do plain work neatly and to keep it clean, and to be comparatively neat and clean in their own persons; and in honesty and industry, when out of school, their improvement far exceeds my expectations; and they have evidently a pride in being trusted, and will not screen in each other any act they consider a disgrace to the school."

Has any suggestion been made to the committee for which you acted, from a gentleman of the name of Kirchoffer?—Yes.

[The witness produced a letter of Mr. Kirchhoffer's, which was read as follows.]

From

From the Rev. Robert Kirehoffer, Clondrohid Glebe, Macroom, County of Cork,
19th August 1822.

307
Mr.
Robert Pauncefoot.

(24 June.)

"It is worth remarking, that this parish is so extensive that heretofore it has paid 650*l.* annually for county charges; that no aid of any signification has been given to the parish out of these funds; that the money so raised has been allocated to other places, and that it has acted as a sort of absentee drainage of money from this parish. As many of your honourable and munificent committee are members of parliament, I should humbly beg leave to suggest a plan, which, if properly digested, would, I am convinced, provide for future exigencies, and would form a resource for the future relief of the distressed peasantry. It appears by the statement signed by our local committee, that the average annual charge has been 650*l.*: suppose that the same rates were continued, and that one half was allowed to go for general purposes, and the remaining half to be allotted exclusively for the use of the parish itself; there would then be available for relieving the distresses of the poor, from the 20th May to the 20th August (a season in which distress generally prevails) the sum of 325*l.* This tax, heretofore paid with discontent and reluctance, would then be cheerfully paid; and the advantage derived in the general improvement of the country, besides providing for the poor, would be very great. The money, of course, to be expended in employment, to be paid weekly, and by such persons as the government, grand juries, &c. might appoint."

You received a great deal of communications from different parts of Ireland about the actual distress, and the causes of that distress?—Yes.

Did not you find that the committee have been in many instances very much misinformed?—I have no reason to suppose that they were misinformed.

What was the meaning of the mission you sent into Ireland; some gentlemen that were sent there to examine?—As a matter of precaution.

Did you never hear that there had been misinformation given to the Committee as to the actual distress, and the causes of it?—No, I never received any such information myself, no such information ever reached me; no letters ever appeared, nor ever were placed before the committee to that effect.

That there had been misrepresentation or deception?—Not that I am aware of, there were some rumours of something of that kind, but I am not aware of any facts.

What was your information with regard to Mayo?—That the population of the county was without means of support.

Was that deficiency in that large county owing to the want of provision or the want of money?—My belief is, that it was chiefly owing to the want of money.

Was there individual exertion made in that county, do you believe, for employing the people and relieving the poor; was exertion made there for finding them greater employment?—Very great exertions were made in that county, particularly in Castlebar, chiefly under the direction and with the assistance, however, of the high-sheriff Lindsay.

By who else?—There were other gentlemen, he was the chief person.

Do you know Mr. Clindinnang there?—Yes, Mr. George Clindinnang and Mr. Alexander Clindinnang.

Did you hear of any particular injury that was done in parts of that county by giving gratuitous relief?—Yes.

To what extent was that mischief felt in that county?—I do not know whether that is capable of estimation, but it was expressed generally.

Were you ever in Ireland?—Never.

Do you know any thing about Ireland, except what you found in your correspondence?—I have no means of forming any opinion except from the correspondence.

Except in the usual supply of that sort of food which constitutes the support of the people in Ireland, do you think that there would have been any greater distress than before?—I think there would; independently of the supposed deficiency of that crop, I think the distress would have been greater in consequence of deficiency in the means of purchase and want of occupation.

To what cause do you ascribe the want of means of employing the people?—Chiefly to the falling off in prices of agricultural produce.

Does the inability of employing the people depend upon the quantity of the food, or upon the price of it?—Upon the price, as I apprehend.

Then you think that with the high price of food there would have been an increased ability of employing the people?—I should think with the high price of food we should not have heard of so much distress.

Where the crops of deficient quantity?—I think the increase of price that would have arisen from the high price of food, would have afforded means of employment.

Mr.
Robert Paunceforte.
(24 June.)

But do you not conceive the high wages of the people would have had to carry an increased price for their food, and that so far as that went they would have been distressed?—As far as that goes I presume they must.

From your experience of the effect of charitable loans, would you say that the plan of those loans had answered?—I do not think a sufficient time has elapsed to give perfect satisfactory proof of the success of this establishment, but from the information that has reached the committee I have every reason to believe that they are likely to answer.

Your answer applies to the new establishments of charitable loans which are now in progress under the direction of the committee, does it not?—Certainly.

Was there not evidence before the committee founded upon the experience of many years back with regard to the system of charitable loans generally?—There was.

According to that evidence do you not conceive that the system of assisting the poor through the means of loans, and strictly enforcing payment of the sum which they promise to discharge, is a system likely to answer in Ireland?—I think nothing is so calculated to answer every reasonable purpose.

Have you any evidence before you of its having answered in different parts of Ireland?—A good deal of testimony in approbation of that system.

Would you say that the plan of charitable loans was a good one, if the parties borrowing have not the power of paying the interest as well as principal back to those who lent them the money?—I would answer that question by stating the mode in which that process is arranged; money is placed in the hands of trustees under certain regulations, local committees receive from those trustees certain limited sums of money for which they give security, and therefore if the poor can obtain from those local committees such small sums as put them into employment, whether they pay interest or not, it must be considered advantageous to the individual who is so assisted; but certainly there is a possibility of loss accruing to those who supply them with those means.

Allowing that those loans are attended with benefit to the borrower, do you consider that it is a system advantageous to the country?—In the situation in which the country is placed I do consider it to be beneficial, but I cannot conceive that any other plans could be safely resorted to; the gratuitous system was so completely opposed.

It is not a system, however, by which the funds of the country would be increased?—Inasmuch as the means of employment is furnished, I should conceive the funds of the country likely to be increased.

Have you heard, and can you describe, the nature of the institution at Londonderry?—The Bishop of Derry stated publicly, that the Charitable Loan Society had been formed for several years in the city of Londonderry, and that it fully answered the purpose of its founder, inasmuch as the only loss which had been sustained was, I believe, a couple of 10*d.* pieces out of a large sum.

Did you hear what the capital of that was?—I did, it was several thousand pounds; I think it was about 16,000*l.*

Were there not other statements laid before the committee, which established the fact, that not only might a charitable loan society be carried on without loss, but with very considerable accumulation of capital in the way of interest?—I understand that that was the fact.

If 12,000*l.* were employed in loans by an individual, would he not expect greatly to increase his capital by the accumulation of interest?—It is exceedingly doubtful in the actual state of things, whether he would rightly calculate upon any considerable addition to his funds, because there are few uses that are considered to be of profitable employment.

If he employed that sum of money in England, would he not add to his capital by the accumulation of interest?—It depends entirely upon the sort of application which he would resort to; in agriculture there seems to be a complete bar to any such expectation.

Taking one man with another, does he ever employ his funds but with a view to augment those funds;—That is the general course.

Do you imagine that persons who employ their money for charitable purposes in Ireland, wish to derive the greatest possible interest they can from it for their own advantage?—I can hardly conceive that to be the leading motive with them; when they lend their money for such purposes, the object is to assist the poor, and they take the risks.

Did

309

Did the bishop of Derry state, that that charitable loan did pay interest or was lent at interest?—I do not recollect whether the Bishop stated that interest was paid or not, I heard his lordship state, that no loss had been incurred.

He did not state whether it was lent with interest or not?—I think not.

You stated that there were three dristicts upon the sea coast, where the inhabitants were particularly distressed?—Yes.

Do you not suppose, that if they had applied themselves to fishing, they might have obtained a considerable supply of food?—It seems, from a report received by the committee, that they had not the means of following their usual occupation for want of the necessary tackling to fit them out for sea.

But if they had the means of fishing, do you not think that that would very materially alleviate their distress?—It would very materially alleviate their distress.

*The Right Honourable Dennis Browne, a Member of
the Committee; Examined.*

Mr.
Robert Pauncefoot.

(24 June.)

*Right hon.
Dennis Browne,
M. P.*

Are you acquainted with the present state of any considerable district of Ireland?—I am best acquainted with the counties of Mayo, Galway and Roscommon, and best acquainted with the county of Mayo.

You have been acquainted with the state of that country during the late distress?—I have been perfectly well acquainted with it.

To what causes do you attribute that distress?—I attribute it very much to the failure of the potatoe crop; the people not being in the habit of buying corn for provision, they depended upon the potatoe crop, and that very much failed; but I attribute the principal cause to the want of employment generally, and consequently a want of means of buying.

Has the want of employment come within your observation very generally through the district of Ireland with which you are acquainted?—Certainly, the population is much greater than the means of employment.

Is there any anxiety on the part of the people themselves to obtain employment?—I think so, there is importunity and begging for it, and they resort to every mode of industry that they can find.

Does that anxiety show itself by a disposition to seek employment even at very reduced wages?—I think it does, nothing can be lower than the wages; a woman-spinner will conceive herself well paid by earning 3*d.* a day; the average of day labour is, I think, from about 6½*d.* to 7*d.* a day; it is 6*d.* in the county in which I live, but in the country generally it may be considered at 7*d.*

Is that, generally speaking, the money price of labour, or is it so much allowance made to the labourer, either in lieu of rent or in exchange for commodity?—It is in some cases, the money price of labour, and in other cases it is allowances in land; which is a very bad way, very uncertain; in which case they never work one-half, whenever it is paid by money on account, what they will do if they are paid every Saturday; but in the common and usual way, they are not justly dealt with, the coming in of the money as uncertain and distant, and in short there is no life or comfort in it.

Does this system of payment of labour in account, apply to the execution of public works, as well as the ordinary agricultural employment of the people?—Upon my word I believe it does, and most injuriously and most improperly.

Do you not conceive, that every possible effort that could be made to introduce a money system of labour, is an effort that would be productive of very great benefit to the peasantry?—I am sure of it, I have not the least doubt of it. I do not know how you could do a greater good to the country, if you could interfere in the matter; I think it ought to be in that way somehow or other, but certainly the greatest discouragement to labour, both public and private, is keeping an account with the people.

Is the anxiety on the part of the people for employment, shown by their quitting the district to which you allude, in search of employment?—It is shown by their coming to this country, frequently in great hordes; it is shown to me frequently, by seeing, when the fishery was in our coast, seeing the labourer taking off his working suit in the evening and going out to fish, and spending most part of the night, returning in the morning to sleep for a few hours.

Have you ever had any opportunities of observing the efforts which the peasantry make, when they are employed in task-work and paid for money?—Certainly; I think it is a great waste of labour employing them in any labour to which task-work will apply, otherwise than by task-work.

Right hon.
Dennis Browne,
M. P.

(24 June.)

Have you ever known instances, in which the anxiety of the people for employment when employed at task-work was so great, as to lead them to exertions almost prejudicial to their health?—So much so, that I knew the priest of the parish, who was a good man, to advise the people not to starve themselves and not to overwork themselves, because they would thereby deprive themselves of the power of constant labour and destroy themselves.

What is the state of agriculture generally in the districts to which your attention has been drawn, is it an improved system of agriculture, or is a defective system?—The worst, I suppose, that ever was known in the world; look at the implements of agriculture, in the spring look at the tillage ground; you would say if you saw them at work, that land will produce nothing.

Do you not conceive, that an enlarged employment might be given to people, by the introduction of an improved system of agriculture?—No doubt of it, but there is not capital to do it; you see them in the spring, scratching over the ground with such ploughs, that are more subjects of ridicule than any thing else, and then look on the face of the country in harvest, and you see it teeming with plenty.

Do you think there is any deficiency of information amongst the peasantry, which prevents the introduction of the improved system of agriculture?—Certainly.

Are there any schools in the counties with which you are acquainted, which at all take up a system of instruction in the improved systems of agriculture?—None.

Do you think that such establishments, with a view to the instruction of young ploughmen and young farm servants would be productive of benefit?—It can only be done, as I said before, by capital; if there is a gentleman in the country, who likes to amuse himself in that way, he will teach a ploughman, who will then teach another; but they have not capital.

Is there a great deficiency in the agricultural implements that are used?—They are bad, and ridiculous beyond any thing; I doubt whether there were not as good in South America when it was first discovered; a spade is not half the width it ought to be, and the plough is such a thing as you can have no conception of. My brother and myself imported some Scotch ploughs, and quite astonished them with their effect.

Is it not a common thing, that one plough does the labour of many farms, passing from hand to hand?—In some cases; but digging is the system used in many parts of the country. I now find ploughs for all my own tenants, and they are delighted to get them; I put them only to the expense of feeding the horses.

Have not there been considerable efforts made in the county of Mayo for the introduction of the linen manufacture?—Yes, and with great success; it was introduced by the late Lord Lucan, and my father, Lord Altamont.

About what time was that?—I think it was about the year 1777.

What description of linens are chiefly manufactured in that county?—They are what they call hall pieces of linens, of fifty-two yards long, and I believe about thirty-three inches broad.

Are they of the coarser description of linens, or the finer linens?—They are not either the one or the other, but they are a middle, between the two; they are pretty much like the Armagh linens.

What may be taken as the average price?—It is very different; about two years ago a yard used to sell at 11 *d.*; now I suppose the best linen goes to 9 *d.* and 9½ *d.*

Has the augmentation of the linen manufacture in the county of Mayo been very considerable?—Very considerable.

Can you state the amount in any of the latter years?—In three markets of that county, Castlebar, Westport, and Rallica, in which I know the sales amounted to upwards of 2,000 guineas a week, and the linen yarn in that county, I am sure, is upwards of 50,000 *l.* a year.

Is there an anxiety on the part of the female peasantry to obtain occupation in spinning?—Certainly the greatest, and a great complaint of the want of implements.

Is the want of implements a matter of very general complaint?—I think it is.

Have you known any instances in which wheels are borrowed and hired by poor people who are not able to purchase them for themselves?—Yes, and that their anxiety to get those implements goes to their paying 6 *d.* per week for hiring a wheel, the price of which wheel is 8 *s.* and their anxiety to obtain a loom is so great; a loom can be very well made for 50 *s.*; I have made a great many for 50 *s.* and the people pay 1 *s.* and sometimes 1 *s.* 6 *d.* for the hire of those looms, which is most rigorously exacted of them.

Are those payments generally made good with regularity by the peasantry themselves?—

selves?—I am sure they are, because they would be processed at the quarter sessions, and every little thing they had taken for the money. I speak here of my own estate and its vicinage, but in other parts of the country a loom will be hired for half-a-guinea per year.

*Right hon.
Dennis Browne,
M. P.*

(24 June.)

What rate of labour have they been enabled to earn?—I think 3*d.*; that is the most for the best woman-spinner, as I conceive; and the average of girls and women I suppose is about 2*d.*

What rate do you conceive the ordinary weavers of the country are able to earn?—The price of weaving a web a year ago was about 10*s.*, and now I suppose if you hire a weaver to weave a web you give him 8*s.*, and if he works by himself he will earn from 7*s.* 6*d.* to 8*s.* I think the average is about 8*s.*; it is a shilling a day; they now earn a shilling a day, and most happy they are to get it.

Have those wages varied much during the last three or four months?—I have known the price of weaving a web to be half-a-guinea, but in the present state of things they can earn 1*s.* a day.

Is there any deficiency felt of proper hacklers in your county?—Yes, the greatest, it is a very great difficulty; a hackler is in great request in the county, goes from place to place.

Is the same deficiency felt with regard to scutch-mills in your county?—The common way that they used to scutch flax was with a machine, which was used to beat down with individual labour; in every stream in the north of Ireland there is a scutch-mill, but with us there are only two that I know of, and with the greatest difficulty we can get them to use those.

Did you find any benefit from the introduction of those scutch-mills?—The greatest, inasmuch as the work of a whole family for the winter may be done in three days by it.

What is the cost of the erection of a scutch-mill?—I think I built a very good scutch-mill for about 50*l.*

You do not include in that sum the expense for machinery?—The machinery and altogether.

Those are beside the assistance given by the Linen Board towards the erection of scutch-mills?—They are; one was built by the Linen Board, but that I made was built by myself.

Are you aware what is the usual grant made by the Linen Board for the erection of a scutch-mill?—I do not know.

Is not the system of hand-scutching not only more laborious and more expensive, but less serviceable to the flax itself; is the flax scutched by mill better than the flax scutched by hand?—I think so.

Is not the mode of preparing the flax when taken from the ground considered to be injurious to the fibre of the flax?—I think when they steep the flax in grounds where there are metals I think the steeping is injured; the colour of the flax is spoiled, and there is more of acids required, which very much injures the flax.

Is not the Irish flax growing from the ground, before it leaves the ground, considered as fine flax as grows upon the surface of the earth?—I have never been in any country but Ireland, and I can only say that the flax grows about three feet high from the ground.

Do you consider that the flax which comes from Ireland to England is considered as good as that imported from Russia?—I cannot tell, I should suppose the flax imported from Russia is much coarser than ours.

Have there been considerable efforts made in your county for the establishment of markets both for linen and for yarn?—Certainly.

In those markets are the regulations prescribed by law carried into effect?—Indeed I think not; the fact is that there are not people there to carry them into effect; the officers or inspectors have no salaries, and all they can get is by robbing people; and half my time that I spend in the market is employed in deciding between the seizer and the owner of the article.

Do you conceive that the establishment of regular markets in your county has tended very much to the extension of the linen trade?—No doubt of it.

Are you aware what steps were taken by Lords Lucan and Altamont for the introduction of the linen manufacture in your county?—At the first they got commissions for buying in Dublin and England, and then they became buyers themselves; I remember seeing my father buying, and then he gave up buying, and now there are English buyers in our markets; and really it is a most delightful thing to see the effects and results of that manufacture.

Right hon.
Dennis Browne,
M. P.

(24 June.)

Do you think that the introduction of that manufacture in that county has contributed to the political tranquillity of that county?—We have seldom had any disturbance, we have more manufacture and more industry than, as I think, any county in Connaught.

Do not you think that if English capitalists could be induced to vest their capital in Ireland it would be the greatest benefit to that country?—No doubt of it.

Do you think that if coroners were permitted to do the duty of sheriffs that it would advance the credit of the country?—I do not know how far that is applicable to this present inquiry, but I have just the same opinion of them as of the linen inspectors.

Do you think that the coroners would be of service to a person who advanced money and lent it upon Irish security?—Not upon any ground that I have seen, they might be changed, they might be altered; I always considered them as a most nefarious set of people.

So far as you are acquainted with the conduct of the coroners in Ireland, are you not of opinion that they have been employed generally to rob both the plaintiff and the defendant?—I hardly ever knew an instance where a coroner made a seizure in which it was not done with the greatest cruelty towards the debtor, and without any sort of benefit to the creditor.

Then it is unnecessary to ask you whether you think repealing the last coroner's act would serve the kingdom of Ireland?—I do not think it would.

By whom are the linen inspectors to whom you have referred in your examination appointed?—They ought to be appointed by the Linen Board, but sometimes a gentleman takes upon him to appoint a linen inspector, to give the man leave to rob the country for his benefit and profit.

Have the operations of the Linen Board, to which you have referred, been directed in your county in a manner, in your opinion, likely to advance the interests of the trade?—I think they have done some good, but I think much more could be done with the funds that they have; if I was a member of the Linen Board I would not exactly do as they do.

In the great deficiency of implements to which you have alluded, is the deficiency of reels particularly felt?—One reel answers for about four wheels.

Is the old hand-reel much used in the county of Mayo?—Not that I know of.

Has the distress, to which you have alluded in the province of Connaught, and the difficulty of providing employment been augmented, in consequence of any alterations which have taken place in your recollection, in the state of the circulating medium in that district?—Certainly. I remember the time when the bankers used to come into a fair and market with a portmanteau full of paper, and this paper he gave into the hands of speculators, and the speculators gave him bills for it, and in this way he used to sit on a sand, the sand-pit was the bank, and he used to issue those notes to the amount of half-a-million of money; I took pains to ascertain the amount of it. I sent to Mr. Wellesley Pole, to say that it would ruin the country, and I called on some understanding gentlemen to come and examine with me, and we wrote a joint letter to Mr. Pole, informing him, that this excessive issue of paper would ultimately ruin the country, to which Mr. Pole answered me, that the government were determined it should continue.

At what time was the first issue of this paper?—It was during the war of course, because upon that, it hung and depended.

Did it continue for many years?—It did; it continued in Connaught, I suppose, for five years.

Was there any circulation at this time of notes under 1 l. what are called silver notes?—Yes, I saw a great deal of them, but that was owing to the scarcity of change in the country.

To what did this forced issue of paper eventually lead?—It led to dissolution and bankruptcy to the people, all flying away, and to every thing that is bad and shocking, and the effects of which still remains with us; in the day-time, you would see a parcel of people in a village, and the next morning they would have run off from it.

Is there any of that paper now in circulation in the province of Connaught?—Not one shilling.

How is the currency now supplied?—By notes of the Bank of Ireland; gold has very little come among us yet.

Did those notes pass in payment at the same value as Bank of Ireland notes?—
I think

I think the people rather wished to have them, I know I have very often given them a Bank of Ireland note, and they have asked in exchange a note of Lord French.

Were those notes payable on demand in bank notes?—They were made payable in Bank of Ireland notes on demand, but they were not payable at Dublin; if you went with them to Dublin, they would give them to you upon paying certain discount.

Were they payable with Bank of Ireland notes in the district in which they were issued?—They were; then came a decision of the Court of Chancery, that this engagement of paying in Bank of Ireland notes was a nullity, and that the people had no good demand upon the Bank at all; that it was a bad engagement to pay Bank of Ireland notes.

Having stated that the people of the country generally preferred those country notes, do you not conceive that that arose from the greater facility of detecting a forgery in the country notes, than a forgery in the Bank of Ireland notes?—Certainly, entirely from that; that was the cause, the preference; it was said, that because there were more forgeries of the Bank of Ireland notes, than there were of the private notes.

Was Lord French the principal banker in that part?—He was; there was one in Galway; they paid as long as they could, but at last they failed; but another banker, Walter Joice, paid to the last farthing of his issue.

Do you think that there exist in the present state of Ireland, any causes that prevent the introduction of English capital into that country, so as to add to the means of employment of the people?—The fear of disturbances, I know very well, prevents them, there are many people would bring their capital there, if it was not for that fear.

Have you any doubt from your local knowledge, that if there were more tranquillity in that country, that English capital might be invested there with great advantage to the person investing, and to the country in which it was vested?—With fortunes to the people more than they can make by any speculation that I have ever heard or read of; it is a country in which fortunes might be made, either by good agriculture or good manufacture, having every possible advantage for habitation.

Are there any other circumstances in the natural state of the country, which you conceive to operate as a check and restraint upon the investment of English capital in that country?—I conceive the foundation to be the disturbed state of the country, and the insecurity of property; and when I see land bought in Scotland for forty years purchase and land bought in Ireland for sixteen years purchase, I can imagine no reason for that; the Irish land being better than Scotch, except different opinion of security in opinion of purchasers.

Could an English, or any other capitalist, obtain the payment of a debt due to him in Ireland, with as much facility as in Scotland or England?—I should suppose not.

Why not?—I am sorry to say, but I am afraid it is the fact, that we are not quite so honest as we ought to be.

Could not the law be put on such a footing as to afford the same security to lenders in Ireland, as is now given to lenders in England?—I conceive that there is all the security of mortgage and bond, and a better security, because there is registry. I know not any security you have in England for money lent or for debts owed, that we have not in Ireland.

Does the want of security to the lender arise at all from the want of proper means to recover money after judgment, when obtained in the courts of law?—Certainly, it is very difficult from the manner in which they contrive to hedge in their great and small properties.

In what manner are writs executed by the sheriffs?—Very badly; if you bribe the sheriff he will never execute the writ.

Do the difficulties which you have mentioned extend to cases where money is lent upon real securities upon mortgage?—I have even seen great difficulty arise in the recovery of debt, but I think in general that money secured by mortgage is very well paid, and the interest, because you can come at the whole stock; if I had 500,000 £. now in money, I would lay it out in mortgage in Ireland.

When you say you have seen great difficulty arise in the recovery of debt, do you mean to apply that to debts secured by mortgage?—I do, in some cases; I have seen an estate put up very lately and sold for a mortgage, and I saw a gentleman of the family buy the estate. There are other difficulties in having the proper parties to the bill, then they throw all these tedious difficulties in the way that they possibly can.

Right hon.
Dennis Browne,
M. P.

Do you not conceive that those difficulties exist as much in England as in Ireland?—I do not know.

Is not the recovery of any sum that is due in England, liable to difficulties and litigation?—I should suppose so, but I know nothing of England.

Are there any special difficulties applying to Ireland that you can state, with reference to those difficulties of litigation?—There are, arising from poverty, and perhaps from a litigious mind and disposition; I think they are more inclined, probably the rich people, to throw litigious difficulties in the way. I have always heard a litigious disposition to be the consequence of a country not so perfectly civilized as others.

Can you inform the Committee what was the last price, to your knowledge, of a piece of linen, such as you have described, of fifty-two yards in length, and thirty-three inches in width?—The last price for the best pieces was from $9\frac{1}{2}d.$ to $10d.$ a-yard, and if the Committee choose, I will follow that, by telling them the labour, and then they will be able to judge of the profit; it takes fifty dozen of thread to make a good sound piece, and that costs fifty-seven pence.

Do you know what time it requires to manufacture such a piece as you have described?—I think they ought to do it in a week, but it generally takes ten days; holydays and other pursuits of idleness interrupt it.

Are you at all acquainted with the fact of there being a demand for that linen at this moment?—I know that there is so great a demand that if they could make twice as much they could sell it; whatever market I visited, whatever quantity was brought there, was sold, whether good or bad, it was sold at different prices of course; but I look to the amount of our export of linen, and talking it over with Mr. Oldham, a great linen merchant here, I asked “may we not overdo this manufacture,” he said “you cannot overdo it—if you double your export I will find you a sale for it myself.”

You have stated that in the county of Mayo the poor are much employed, and that they have been pretty uniformly tranquil; as an Irish gentleman who must be well acquainted with your country, in your opinion is not the want of employment in the whole of Ireland the great cause of the disturbances that have taken place in that country?—Most certainly.

Has not the amount of the sales of linen fallen off in this market?—No, greatly increased; in the worst times I never saw a piece go out of the market unsold.

Do they sell now at a remunerating price?—The prices were low, and of course it was not when it was lower, a remunerating price, but they were always sold, every thing was taken away.

Do you not consider the population of Ireland to be redundant?—I do, certainly; I think if we had two millions of people less, we should be better than we are.

Would you consider the population as redundant, provided you had the means of greatly increasing the capital of the country, and thereby giving additional employment to the people?—I have great doubts whether the surface of the land is enough for the people, but if you had a capital you would employ them in other things besides agriculture.

To what cause do you ascribe the lowness of wages in Ireland?—To the value of the produce here; if you sell a stone of potatoes for $3d.$ the value of the labour that produces, that I conceive must bear a proportion to the price at which you sell it.

Do you not attribute the lowness of wages to the redundant population, and to the quality of food upon which they live?—Certainly. If there were ten labourers, we should get those at a lower rate than if there were only two; and I am sure the redundant population is very much increased by the facility of feeding them.

Are the labourers paid their wages in money or in produce?—They are often paid their wages, I think, in produce, and in accounts against them. Their landlord has an account for rent, and an account for sheep, and an account for wool; and that account is settled with the tenant, who knows nothing about accounts, and, consequently, I think he is sometimes very ill treated.

Do you ascribe the late distress in Ireland to the failure of the crop of the general food of the people, or to any other cause?—I ascribe the late distress to the failure in the potatoe crop; at the same time, I never saw, in the spring of the year, potatoes much cheaper than they were. In the county of Mayo, at the time of all that distress, the granaries were stored. There was no price for the corn. I think oatmeal went

315

went for about 15s. a hundred, which was about 7s. a hundred for oats. In short, there was plenty for every one; there was no deficiency of any thing, but the means of buying.

Not of potatoes?—Yes; but, at the same time, I never saw the potatoes cheaper in any spring than in the spring of that year; they were about 6d. for fourteen pounds weight.

Why is not task-work generally resorted to, if it be so much more productive both to the employer and the labourer, as you have described?—For this reason, that task-work must be paid for with ready money, and the usual dog-trot of day labour is paid for by an account at the end of a quarter or half a year. I believe that is the fact; and if you work by task, you are obliged to give it to all; any one may come to you. But it is a waste of half the labour, from the way they carry it on: if they get sixpence, they do not do two penny worth of work for it.

Would not the situation of Ireland be very much improved by introducing a better system of paying the labourers?—Most certainly.

Do not you think that that mode of paying labourers is very much occasioned by the employers not having money to pay them?—I dare say it may be.

Would not the same capital be more productive than it is in Ireland, if improvements in agriculture were generally adopted?—To be sure, if we look at the quantity that we raise instead of the price. If we were to raise three bushels of corn, or three bushels of any thing, instead of one, we will have more produce of price; and if, thereby, capital will introduce manure and other things, there is no doubt that Ireland will some time or other be a great agricultural country; because I should hope that our connection with this country, some time or other, must tell, and we must take some of your knowledge, and industry and management.

Would not, then, the situation of Ireland be much improved by the adoption of those improvements, although no capital were to go to it from this country?—I think it might, but it would be only in partial instances; for I think there never can be an improved system but from an increased capital. I think it may now and then tell a little; but to speak of a general system, you will never have the energies of that country work till you have capital to work them.

Could a capital be as beneficially employed under the superintendence of government in Ireland as it is now employed by proprietors in England?—I do not conceive that any such superintendence can answer at all. I conceive that it must be the individual interest that a man has in any concern that will make him manage it well. I never heard of any concerns that were undertaken by government, except making a canal and things of that sort, managed with private economy.

If government were to advance exchequer bills to the manufacturers in Ireland, would the capital so employed be, in your opinion, more beneficially employed than the same capital employed in England?—I think it would be better employed if there were loans of money to individuals; if that could be done securely, I think it would be better employed, because Ireland would have some capital, now it has none.

In order to employ the additional capital in Ireland, would it not be necessary that the capital should be withdrawn from some employment in England?—I do not pretend to give any information about this country, for I know nothing of it, no more than I do of France.

Can a capital be furnished to Ireland except by withdrawing some capital from England?—No; I am sure not.

Do you know what the rate of profit of the manufacturer is, in the linen manufacture of Ireland?—I know no rate of profit but the value of his labour; 8s. for his week's labour: the weaver gets his profit in weekly labour, he then sells it to a factor, to buyers who are all about from this country; this factor goes about and buys those linens, and brings them to Dublin, or to England generally; to Dublin sometimes he sends them, to Irish bleachers.

There are no great linen manufacturers in Ireland possessing large capital?—There is no such thing in Connaught; in the north of Ireland there are great bleachers; every man works in his house. I consider that the linen manufacture in all its bearings, is a most excellent thing; for first, there is not the profligacy that arises in large manufactories, for having a number of men and women brought together; and in the next place, there is not a person in the family of the man that is not employed. His wife and his elder daughters are employed in spinning, and the children in filling quills; go into a weaver's house, and you will see a general system

Right hon.
Dennis Browne,
M. P.

(24 June.)

Right hon.
Dennis Browne,
M. P.

(24 June.)

of industry, but there is no such thing as a great manufactory, such as you have in this country.

Is the linen manufacture extending?—Certainly; but I do not think it is taking the direction of places where it was not before; now in the county of Cork, there is no linen manufacture that I know of; I have always observed, that when you have the roots of it laid, and the foundations of it laid, it is easily increased, but founding a new manufacture is very difficult.

Are the people more averse to the introduction of machinery in the linen manufacture of Ireland than in England?—It has not been tried.

If government advanced capital for the purpose of employing the people in general, would it not run as great a risk from the disturbed state of the country of losing such capital, as if it was advanced by English individuals?—If it was well regulated, I think it would not be so; for example, in making a canal, they are employed every day, and receive their wages every week.

The question refers to capital that is lent and returned?—I am very sure that if proper precautions were taken by an individual, I cannot say by government, because the government would not examine into it enough; but I know that a great benefit in Ireland was those charitable loans; and I never knew of their losing, but by some chance those loans fall off; in fact, that sort of system would be the best in the world, if the details of those small loans were well conducted; I am sure they would be productive of the greatest benefit.

You have stated with respect to capital lent by individuals from England, that individuals from England are deterred from lending capital to Ireland on account of the risk they run of losing it; in the counties where the same risk would not be run by government, has government advanced capital to Ireland?—The way in which government and individuals would employ it is very different; individuals would employ it in establishing certain manufactures, and those might be swept away in a day, but the way that government would employ it would be by making roads and canals.

If government lend capital for the purpose of making roads and bridges, how could it recover the capital back again?—By modes of security; I am a commissioner of a board for lending from a consolidated fund; I believe we have lent out about 3 or 400,000 *l.* the grand jury presentments is the security which government would have; we only get the private security of individuals, and we have not lost 1 *s.* At one time, there was a great distress among the merchants, and the board was established for the purpose of relieving the merchants. I think a very sensible worthy gentleman, Mr. Patrick, told me that government had gained 35 *l.* on the whole, by relieving the merchants in Ireland.

Could not individuals in England obtain the security you have now mentioned?—No, I think not; they could obtain the securities of grand juries.

You have stated, that through means of the board, under whose authority advances have been made for making roads, are there not districts with which you are acquainted, in which the opening of those roads, has, by opening markets, very much increased the employment of the people?—I should think there can be no doubt of it; in one district only, which contains forty thousand people, and contains the finest harbours in the world, the soil is most productive, and yet since Ireland has been in possession of England, there never was a road into that district until now, which has now opened the whole of that country, where we have established a post-office and schools, and civilization is taking place very fast.

Do not you conceive, that the opening of those roads not only tends to opening the markets, but also to the general tranquillity of those districts?—Very much; Conamara and Erris, in Mayo, were places where all villains and robbers used to hide and conceal themselves; they were entirely at Erris and Conamara; at Conamara they set the law at defiance. I remember after the rebellion, all the leaders of the rebellion used to be walking about the country at Conamara and Erris, and at last we were obliged to make a compromise with them, and to allow them to go off to America.

Are there considerable districts in those parts of Ireland with which you are acquainted, which are of the bog and mountain character?—Very great, in the county in which I live particularly.

Are there any difficulties felt in consequence of the want of a general drainage bill, which impede the improvement and enclosure of those mountains and coarse lands?—I think a general drainage bill would be a very good thing, but I know no difficulty,

317

culty, except the want of money to do it; sometimes there will be a person that would say, "I will not allow you to run a drain through my land," from perverseness.

Is there any mode under the laws, as they at present exist, by which those lands could be rated in proportion to the profit they derive from such improvements?—None that I remember.

In the event of drainage being carried on, and either water flowing from higher lands coming upon your land, or the water which you are anxious to carry off from your land flowing over lower lands, is there any means by which you could carry a general system of drainage into effect?—I do not know.

Do you know Mr. Nimmo's reports upon that subject?—I know his report.

Is not Mr. Nimmo a man of good character?—Indeed he is, and one of the ablest men I ever met with in the course of my life.

Has not Mr. Nimmo become unpopular in Ireland for his known attachment to the system of poor's rates in that country?—He spoke to me about a system of poor's rates, and that did not make him very popular with me.

Are you acquainted with any alterations which are now generally taking place in Ireland with regard to the system of tenancies in that country, whereby a number of small farms are reducing into large farms?—We have a system of common tenancy, that is, we let a hundred or fifty acres of land to a certain number of people, and they have a lease for a certain time, and each of those persons will have a division of five or six acres; he marries his daughter and gives her an acre of this land, and he marries his son and gives him an acre of this land, and in consequence of this the population is increasing most viciously; what I mean by a vicious population is, that there is more than there ought to be, and I have seen a case in which they have land for ten shillings an acre, in which the people so having it, have been the poorest people in the whole country.

Are not efforts generally making in the country to counteract this system of dividing land?—Every man that is not a fool is endeavouring to counteract it.

Is not the effect of this system a contraction and union of small farms into large farms, and a reduction of the number of people upon those farms?—I had rather have the system of farming that we have now; manufacturing land is a very difficult thing; they have not the means of doing it, and therefore they must work that manufacture badly, and therefore I had rather have the farms settled as they are in England.

Is there not, generally speaking, a system now going on of uniting small farms into large farms, wherever there is the power of doing so?—I do not know; I am not seeing that: I think that people are very glad to let their lands; I think they set them only as they used to do, except that now this common tenancy is not resorted to. If I had a farm I should provide that each man should have his portion.

Do you conceive the common-tenancy system to have a tendency to diminish the employment of the people?—I think it has.

Are not people less disposed to work the farm, and to be industrious, than if each man had his own portion?—If there is one idle man on the village he will destroy them; and if there is one industrious man upon the farm, he will be undone by paying for others.

Mr. William Furlong, called in; and Examined.

WHAT is your profession?—I am an Irish solicitor in the Court of Chancery.

Have you been for many years engaged in that profession?—I have been solicitor since 1809.

As solicitor, have you been concerned in the negotiation of any investments of English capital in Ireland, or any applications for such investments?—I have, and more particularly in endeavouring to borrow English money.

Are there any difficulties with which you are acquainted which impede the investment of English capital in Ireland?—There is a prejudice; I can say so much for many parts of Ireland. I have been anxious to get money: if I offered estates in Ulster or Leinster, I should get money; if I named Munster or Connaught, I could not get it.

What are the circumstances to which you attribute the greater difficulty of obtaining investments of English capital in Connaught and in Munster, which do not apply to Ulster and Leinster?—Entirely the disturbances of those parts.

*Right hon.
Dennis Browne,
M. P.*

(24 June.)

*Mr.
William Furlong.*

Mr.
William Furlong.

(24 June.)

The state of Connaught not being disturbed, are there any other circumstances, independent of the disturbances, to which you attribute this difficulty of obtaining loans?—To one, I think, in a good measure: the different gentlemen having properties there from time to time, they have encumbered their estates so heavily, that to enable a gentleman to be relieved we should get a sum to pay all the debts, and in getting that sum the estate is not a sufficient security for the sum that is sufficient. Formerly there was a great facility (from 1805 to 1812), and I could get a gentleman 200 l. on bond; he got the money, he took the goods.

That was when paper money was extensively issued?—Precisely: then he was sued on these different warrants; he was obliged to raise the money and pay the costs.

Do you conceive that any of the objections which lie in the way of investing English capital in Ireland, arise from the want of proper means to recover money after judgment is obtained in that country?—If the question refers to money lent on mortgage, provided the estate be sufficient security for it, there is no difficulty that can account for it that does not occur in England; I think I can recover debts as expeditiously in Ireland as in England.

But on debts that are not mortgage debts, do you conceive that there exists any difficulties in recovering their amount in Ireland that do not exist in England?—I do; I believe the rents are better paid in England.

With reference to execution of the process of the court?—I do; I think that in England there is a greater facility in recovering, if the question alludes to the sheriffs.

Is there any thing in the system of administering the civil process through the sheriffs in Ireland, which creates a difficulty in recovering the debts?—There certainly is; there is an unwillingness, in the first place, if there is an execution against the person, to have it executed; it is almost impossible.

Have you ever known any arrangement made between debtors and sheriffs, which increase the difficulties of recovering money in Ireland?—I am very unwilling to mention it, but I am sure there is too much reason to say it; I believe that gentlemen have understandings with sheriffs, and men deeply involved; I am sorry to say, I have a great many clients in that way.

Have you any doubt that such understanding with sheriffs prevails to a great extent?—Not the least.

Have you ever heard or known of arrangements being made with sheriffs, whereby the same fees were paid to the sheriff, for not executing the process as he would have been entitled to in case he had executed it?—I can give the Committee one instance in the province of Connaught; that an English gentleman came over, he went with the execution, and he offered the sheriff to give him 500 l. on arrest, and 1,000 l. on committal to gaol; he agreed to it, and was delighted with the offer, and in the course of a fortnight or three weeks after he apologized that he could not execute it; and I have reason to know, that he got a larger sum for not executing it.

Do you not conceive that such interference with the execution of the civil process in Ireland operates most materially to the discouragement of investments of English capital in that country?—I know that it does; different gentlemen, since I came here, have complained of the difficulty of recovering money; they do not like lending money; gentlemen that could lend money very largely.

In what manner are writs executed in Ireland by the under sheriffs?—Against the goods or the person; they generally execute them themselves.

Do they grant specialties?—Yes; but they require, I believe, to be paid very high, and to get indemnity; but they do not wish to grant specialties.

Generally speaking, they decline granting specialties?—They do; I do not know any officers that require to be regulated more than the sheriffs of Ireland, and I regret very much the Commissioners of Inquiry have not the power of doing so; or if they have, that they have not exercised it; it is altogether regulated in a very bad manner.

Do you conceive that making it necessary they should make their returns upon a fixed day, would be an improvement?—They are bound to do that at the present moment.

Do they do so?—They do not, I think; one of the great inconveniences that the profession suffers is the delivery of the writ to the sheriff; he has no office; he will tell you that the gaol of the county is his office, and he will take care not to be there when he is expected to be; and I do not know any thing that would tend

319

Mr.
William Furlong.

(24 June.)

tend to facilitate the recovery of money more than to have this regulation, that every sheriff is bound to have a returning officer to return his writs, and to deliver the writs to the returning officer, who must be in Dublin; as a good delivery, it would prevent a good many of the tricks that are played to evade the delivery of the writs.

Are you acquainted with the general practice, with regard to the execution of civil process by sheriffs in the southern parts of Ireland, in the province of Munster?—I am.

Do your observations apply generally to the southern and western parts of Ireland, in which you have stated this difficulty of obtaining money to exist?—I should say through all Munster and Connaught, for years; it was quite proverbial, that out of Roscommon there was no getting money from the sheriff.

From the communications you have had with capitalists in this country, are you led to believe, that if there was a more efficient mode of recovering debts in Ireland provided for, and this collusion between debtors and sheriffs prevented, that English capital might then be vested in Ireland more extensively than at present?—I have not the least doubt of it.

Do you believe such investments of English capital in Ireland would be productive of benefit to the people of that country?—I do, if the question refers to lending money to persons of landed interest; the gentlemen of estate there have got money at six per cent interest, amounting to the value of two thirds of the estate; now, if they could get money at four per cent, and pay off the debts, it would give the gentlemen means to live upon.

Do you not think that such an alteration of the system would enable the gentlemen of Ireland to give more employment to the peasantry of that country?—I have no hesitation in saying so; I am myself concerned for many gentlemen in Ireland who are exactly circumstanced in that way, that the six per cent takes away all that they have to live upon, unless they take this off to pay the interest the consequence is that they are ruined; one gentleman had an estate put up very lately, and he was offered 60,000*l.* for it many years ago, and all he could get for it was 26,000*l.*

Does not the present distress of the landed interest in Ireland contribute very much to reduce the means of employing the peasantry in that country?—I have not the least doubt of it.

Does it not also lead to a more rigid enforcement of rents than perhaps might be consistent with the feelings of the individuals themselves or the general interests of the country?—Certainly.

Are you acquainted with any considerable portion of Ireland?—I am.

Can you state to the Committee whether there is or is not a very great want of employment amongst the people of that country?—I can, that there is a very general want of it.

Is there an anxiety on the part of the people to obtain employment?—They are most anxious; and I do believe, if they had employment there would be no disturbance now.

Do you think that want of employment is one of the great causes of disturbance in that country?—I do. I have reason to know there was a vast deal of disturbance upon one particular estate, and a relation of mine has been lately appointed agent on that estate; there are thirty-five thousand acres on it, and there it was rebellion; and from the liberality of the trustees enabling them to employ the poor there, he assured me that he had not one troublesome man on the estate now, and they are all quiet and most anxious to work and be industrious, and they were actually starving when he went down.

The state of such property before such means were adopted was one of great insubordination?—Great.

And great distress?—Great distress; my brother's instructions at first were to employ as many as he could, and he, a young man going there found, that 2*s.* a week would support a man and support his family as well as he could; and he employed a thousand men at 2*s.* a week; and the way he did it was, to employ five hundred for the first three days of the week, and five hundred more on three other days.

Your brother perhaps is not afraid of assassination?—He is not; so little is he afraid, that when he last visited us in Dublin we wrote to him not to go without being guarded by two dragoons, and he dismissed his clerk and he rode alone, just to show the people that he had confidence in them.

Are you aware whether under the altered value of property in Ireland there is

Mr.
William Furlong.

(24 June.)

a great alteration in the tenures of the country taking place, whereby a number of small farms are consolidated into large ones?—I do; and I am assisting on some clients estates to effect that; fifteen years ago I set an estate with farms altogether to thirty tenants, when I went down there two or three years ago, I found that instead of having thirty tenants I had two or three hundred.

Do you not conceive that the system of subdividing lands leads to the worst consequences both to the proprietor and to the estate?—The very worst; they were a miserable set of people; those that they were set to first were a respectable set of men; when I went down there I could not identify any of the leases.

Then you consider it the interest both to the estate and of the proprietor to revert as much as possible to the system of large farms and more solvent tenants?—Certainly; as to small farms, I attribute a great deal of the mischief that has been done in the great estates to the object of making 40s. freeholds, and there they have as much as will just produce the 40s. and a great deal of the subdivision of that I have just been speaking of was to make interest in that way.

Does not the improved system to which you have alluded, lead to the diminution of numbers of people upon the estates to which the improved system applies?—Certainly, it does.

Do you think that the improved system is one which is now acted upon, or likely to be acted upon very generally, or in many cases, in the south of Ireland?—I do.

The necessity of acting upon that system is generally admitted by all persons who have turned their attention to the subject?—It is.

Are you aware of what becomes of the population which, under this alteration, lose their small tenures in land?—Many of them are the persons that are creating the disturbances through the country, others of them try to get away.

In your judgment, does not one cause of the distress of the Irish poor arise through the excessive rent they pay for land?—It does.

In many cases those rents are much beyond the power of the tenants to pay them?—They are; a tenant, when a farm is to be set, the unfortunate man will bid on, and bid on, till he becomes the tenant; he does not take into consideration the different taxes on the land in bidding for it; indeed I do not believe he takes into calculation the value of the land.

This alteration in the system leads in its consequences to deprive a number of the peasantry of Ireland of their present homes?—It does.

Have you not known instances in which houses have been taken down, houses have not been repaired, and every possible discouragement thrown in the way of the erection of new houses?—I have, the object was to extend the farm, and to make one tenant instead of several.

Have you turned it in your mind at all, what new provision can be made for the population of those farms, who are thus deprived of their ordinary means of subsistence?—If there was capital there to improve some of the present unimproved parts of the country, and those men were settled there; there are different parts of Ireland, where there is plenty of ground for them, if there was money.

Do you think the introduction of manufacturing industry, might safely occupy some of this disengaged population?—No doubt of it.

Do you think, that assisting them in their means of quitting the country, would have a beneficial effect?—It would, when in the midst of the disturbances of those very troublesome people in the county of Limerick, they were willing to leave the country.

Have you any doubt, that those alterations of tenures which are now going on thus, deprive a great number of the peasantry of their homes, and must lead to great disturbance and insubordination, if some means are not taken to provide for those persons?—Certainly; many of them now in the day-time, hide in ditches, and in the night, they are robbing; and I know some of the unfortunate men will say, "sir, give me the means of supporting myself, and I would rather have any kind of life than this."

You have no doubt that does contribute very largely to increase the spirit of insubordination in the south of Ireland?—Very largely; and if I may be allowed to suggest one thing, I do not know any thing that could be of more service to Ireland, than to enable the gentry to live in it; I do not know any way in which that could be effected so easily, as to induce government to lend a sum of money, to enable the gentlemen that are at present paying six per cent to have it at four, and then they would have something to live upon; for they have borrowed money to the extent of two thirds of their estate. We will say an estate was worth 30,000*l.* he borrowed

20,000*l.*

321

Mr.
William Furlong.

(24 June.)

20,000*l.* upon it, and the estate is not now worth 20,000*l.*; now if the person who had 20,000*l.* was paying 1,200*l.* for it, he would have 800*l.* to live upon. I am professionally concerned for gentlemen of the first respectability, and they would require at least 600,000*l.* to relieve them, and they could give security to the extent of a million or more.

How long do you suppose that such a loan would be required on the part of the landed interest of the country?—They are so beggared at present, it would require some time to work up the arrears.

Seven years do you think?—I should say ten years; I think in ten years they would be enabled to repay it.

Do you think such a loan for twenty years would enable the government, who advanced the loan, to be repaid?—I have not the least doubt of it, that twenty years would completely repay it, and you would have the gentlemen completely relieved.

If the Irish gentlemen to whom you have just referred were enabled to borrow money at four per cent for twenty years, under the condition of repaying interest at four per cent by half yearly payments, and five per cent of the principal per annum, do you think that alone, on such principles, would tend considerably to alleviate their distress?—I am afraid not; they would then be paying nine per cent. My view of it is this, that, getting the money at four per cent at present, all they could do would be to pay the interest; but at the end of ten years the land would be at least as good a security as at present. Now here is an estate that is worth 20,000*l.*; if I was offered 5,000*l.* at the end of twenty years, though there was a loan of 20,000*l.*, one half of the estate would pay it. If you lend money in Ireland at this moment, you will get to double the value of the same rent; and certainly, then, the government would be perfectly secured, for either that person or government themselves could sell a portion of the estate.

Do not you believe that any mode, by way of loan, at a low rate of interest, which could assist the Irish gentry, would contribute to make them resident, and thereby produce peace and tranquillity to Ireland?—I have not the least doubt it would do more service than any one measure that could be resorted to.

In making that suggestion, do you wish to confine the relief to which you allude, to gentry resident in the country, and not to absentee proprietors?—I would not lend the money to any one that did not become resident; it should be as an encouragement to residence.

Having made your observations applicable to gentlemen whose estates are subject to incumbrances, do they not apply in nearly the same degree to individuals who are subject to large head-rents, taken under higher prices than those which are at present paid?—Most certainly.

Is there not a great proportion of Ireland which is thus subject to head-rent?—A great proportion; gentlemen living on their estates paying large rents for the land; and it is a great pity that they are not protected.

Have you any doubt that the introduction of some relief, of the nature of that to which you have alluded, would contribute extensively to the employment of the peasantry of that country?—Certainly, it would.

You believe, then, that the reduction of employment among the peasantry of the country, arises very considerably out of the distress of the landed proprietors?—It does principally out of that, and for this reason, as to keeping accounts with the tenants, the fact is, the gentlemen have not the money to pay; they are obliged to keep an account, and they have not the means of paying that afterwards.

Have you any doubt that that account system for labour is productive of bad labour in the first instance, and great uncertainty to the tenant in the next place?—Certainly.

Has the tenant any means of checking the account, so as to be satisfied in his own mind that full justice is done to him?—He has not, and very often he thinks he is not done justice by.

Does not that produce a general dissatisfaction in the minds of such tenants, and lead considerably to the present distracted state of the south?—It does. I will take the liberty of mentioning another circumstance. Gentlemen, from 1805 to 1812, were most anxious to get large tracts of land, and abate their rent for it; the landed property they had is now gone; if some arrangement could be made to see what was a fair rent for land, and some inducement to landlords to abate the rents, it would be very desirable. I will give an instance of a gentleman I know, who has

Mr.
William Furlong.

(24 June.)

been forced to pay 2,000 *l.* a-year, and at last the man went off to France, and the landlord would not abate.

Do you know many instances in which rents of that description have been paid out of capital of the party, and not out of the produce of the land?—I do, several instances; and I do not know a harder case there is in Ireland than that. I know myself men that had 1,000 *l.* a-year, that lived within their income; the value of the ground fell, their tenants were not able to give them one half of the rent, and the consequence was, that they were obliged either to run away or still to keep it up.

Mercurii, 25^o die Junii, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

Mr. Thomas Oldham, called in; and Examined.

Mr.
Thomas Oldham.

(25 June.)

WHERE do you reside?—Number 3, Barge-yard, Bucklersbury.

What is your occupation?—A linen merchant.

As a linen merchant, have you been a considerable purchaser of linens in Ireland?—Yes, for a great number of years.

Have you ever visited that country?—I never was in the south of Ireland; I have been in most other parts; and to Ireland five or six times a year.

Have you an extensive correspondence with that country?—Yes, very extensive; as much so, I dare say, as any other house in the kingdom.

Does that correspondence, and your own observation, enable you to speak with regard to the possible means of employing the people of Ireland in the production of linen?—Yes; I should think I know as much about it as most.

What is the state of the linen trade at the present moment; is it increasing or diminishing?—It has been increasing ever since I had any thing to do with it, and might be further increased.

In what particular branches of the linen trade is the increase now taking place with the greatest rapidity?—There are articles in imitation of German goods, that are of some standing, that are increasing very fast.

How long is it since the production of those imitation linens has taken place?—I think the first I ever attempted is about fifteen years ago; but there were goods made in imitation of German linens thirty, or four or five and thirty years ago; for instance, brown platillas.

Were they then, at that time when your acquaintance with the trade first commenced, manufactured to any considerable extent?—Not at all.

Are they now manufactured to a considerable extent?—Certainly.

In what parts of the country does that manufacture chiefly take place?—It is principally in the north and west of Ireland.

Does it take place considerably in the county of Mayo?—Yes.

Is it an increasing manufacture?—It is, I believe.

From your knowledge of the state of the market, do you think that branch of manufacture capable of considerable extension?—I do.

Is there such a demand for the imitation linens, as to render it likely that the production of those linens being increased in Ireland, the sale could be continued at a profitable rate?—I think so; I have no doubt of it.

Where are those linens sold?—In Spain, Portugal, north and south America.

Has the manufacture improved?—Very much.

Has it improved considerably of late years?—Yes.

Are there any circumstances which fall within your knowledge, which prevent the further extension of this manufacture in Ireland at this moment?—None that I know of.

Have you ever heard of any deficiency of implements complained of, or want of regulation of markets, which may operate as a discouragement to this manufacture?—I have heard of both; but I cannot speak to that of my own knowledge.

Have you of late sent any specimens of the German linens to Ireland?—Last year, specimens of all descriptions of German linens, and some were sent by the Irish committee, I believe, to Cork.

Have you received any manufactured goods from that country, manufactured in imitation

Mr.
Thomas Oldham.

(25 June.)

imitation of those linens?—I have got a sample of one article, which is brown platillas, which is very well executed.

Is it furnished to you at a price, and in a condition likely to produce an easy and advantageous sale?—Very likely to produce reasonable profit.

Do you think that the linen trade of Ireland could support itself without bounty?—No, certainly not; under existing circumstances it could not do it.

Are there any great capitalists in Ireland employed as manufacturers in the linen trade?—I believe there are some; there is Crossthwaite and Sons in Dublin.

Have you any knowledge of the rate of wages generally given by manufacturers in that line?—No, I have no knowledge whatever.

Do you think they are higher or lower than they were during the war?—Lower, certainly.

If the trade were extended, do you think the market could take off a great deal more?—Unquestionably; there is not a question about that at all.

But not without the bounty?—Not without the bounty. I consider the linen trade to be still in its infancy, it might be carried to a much greater extent.

Do you think the linen trade of Ireland will eventually be carried on without a bounty?—I do not know; that will depend very much upon the state of the continent of Europe.

Do you not think, that in general those trades are not desirable which require a bounty to support them?—No, I am not of that opinion; for you would not have created the imitation of German linens in Ireland if it had not been for the bounty, nor could this branch of linen trade be continued at all, but for the bounty.

Do not part of the profits of the linen trade come out of the pockets of the public by means of the bounty?—I think not part of it; the linen trade is carried on at a very small profit.

But as far as the bounty goes?—There is no one gets any thing like the bounty by the linen they sell.

In what parts of Ireland do you think that the linen trade is likely to be increased, carried on more extensively?—I do not know; I think Mr. Brown has extended the linen trade in his district as fast as any one.

Do you think it is capable of being increased considerably in the southern parts of Ireland?—I should think so; I do not see any objection why it might not be extended there as much as in the north.

Are you a purchaser of linens in the market of Clonakilty?—Yes.

What description of linen?—Both brown and bleached.

Are you aware whether the linens sold in that market have increased in amount within the last ten or twenty years?—No, I cannot speak to that, I am not competent.

Are you acquainted with the regulations which the law prescribes in Ireland with regard to markets, the linen markets, and the yarn markets?—No, I have nothing to do with the yarn markets; I know with regard to the linen markets, that the law prescribes that the linens should be sealed before they come into the market, as to lengths and breadths; and the seal-masters ought to see that they are of the proper quality before they seal them, that is, that the outside linen is not superior to the inside.

Do you conceive that those regulations are useful?—The trade cannot be carried on without it; the linen trade could not exist if that was not the case.

Do you not think the ordinary rules of interest between buyer and seller would be sufficient to guard against any fraud?—I am sure they would not in the linen trade of Ireland.

Will you state the reasons upon which you found that opinion?—In the south the country markets are not properly regulated in this respect; in the north of Ireland the seal-master does not seal a web that is defective in any respect, but in the south of Ireland they are not looked over with the same exactness; this is a thing that is material to the manufactory being established in the south.

In consequence of such inaccuracies on the part of the seal masters, have you the same confidence in giving an order for linen in the south that you would for giving an order for linen in the north?—May I be allowed to explain that in a different way; for instance, the linen that is bleached in the south of Ireland, they bleach and fold it in such a way, that it would not answer for exportation; for instance, the outside of the web as made up, is generally two to three inches wider than the inside of the piece.

Mr.
Thomas Oldham.

(25 June.)

Do those inaccuracies proceed from any inattention or want of skill on the part of the seal masters?—I do not know what they proceed from, but it is a part of the business of the seal master to see that remedied, and which out to be strictly enforced upon them.

Do you conceive that a more strict and accurate enforcement of the regulations of the linen trade in the south, in the same manner as you have described them to be enforced in the north, would have the effect of extending the sale of linens in the south?—I think it would be beneficial if the laws were strictly enforced; I conceive they are not at present.

Have you any doubt, from the information you have received, that there is a very great deficiency in the implements in the south and west of Ireland?—I believe there is, but that is only hearsay; I cannot speak to it of my own knowledge, if I may be allowed, I will suggest one thing, that I think would be very beneficial to the establishment of manufactures in the south, and that is, that there ought to be premiums given in the same way as Mr. Brown does in the county of Mayo, for the encouragement of the best webs.

Has that been done in the county of Mayo, by private effort, or has it been assisted by any public institution?—Mr. Brown can answer that question; all I know is that it is done, and has been a great means of improving the manufacture.

Do you consider the cultivation of flax in Ireland to be as extensive as it might be?—Oh, no; I have always been giving Mr. Brown advice to extend it as fast as possible. I think the growth of flax ought to be three times as much as it is.

In the event of an extension of the cultivation of flax, do you conceive a sale could be procured for it in the British market, as well as an increased consumption of the manufacture at home?—Both.

Have you ever seen samples of Irish flax as sold in the Irish markets?—Yes, I have seen the flax in the Irish markets myself frequently.

Are you acquainted with the mode in which foreign flax is brought to sale in this country?—Yes, I have seen it brought to sale in this country.

Which of the two is the more valuable?—One is sorted and the other is not sorted, and it is a great disadvantage to the Irish flax, not being sorted.

What are the distinctions, besides sorting, which exist?—The foreign, is made up in regular lengths and put up, so that a man can judge of the quality he buys; that is not the case with the Irish flax, which is brought to market; that is as I understand it.

What foreign flax do you allude to?—All that comes from abroad is always made up in regular bundles, so that the quality is known.

Is it not also much cleaner in its preparation than Irish flax?—Yes, it is all prepared; the Irish is not.

Are you acquainted with the process that is adopted for the preparation of foreign flax?—No; I am not at all.

All foreign flax is not equally valued?—No, the best comes from Flanders; the Russian flax is not so fine.

Do you know whether there are officers appointed there?—No, I do not.

Or in any other part of the Continent?—No, I do not.

Do you conceive that any other local effort or legislative regulation, which would have the effect of improving the manner in which the flax is prepared for the market in Ireland, would have the effect of extending the cultivation of flax?—I cannot speak to that, but I know that if the Irish flax was prepared and properly brought to market, the seller of it would get more than he does at present.

Would you think it advisable to encourage the flax, by premiums and bounties?—I should think it advisable by any means possible; that has been my advice to Mr. Brown ever since I have known him.

Can you inform the committee whether the natural quality of Irish flax is as good as that of the foreign?—I should think they could grow as good flax in Ireland as any part of the world, except that about Valenciennes, which is used for the purpose of Cambrics; they certainly do not grow as fine quality in Ireland as that.

Can you at all calculate as to the probable extent and increase of which the linen trade in Ireland is capable?—No, I do not know; but from the way it has gone on with respect to those imitation goods, I have no doubt it may be very considerably extended.

325

Mr.
Thomas Oldham.

(25 June.)

Is there any additional machinery, such as callendars, or any other description necessary for the preparation of those imitation linens?—It requires beetles, such as are used at bleach greens, in the north of Ireland.

Are you aware whether those beetling engines are to be found at the bleach greens in the south and west of Ireland?—I believe very few; there are not many in the province of Munster; a great quantity of linens that are manufactured in the south are carried to Scotland to bleach, and that is solely from the want of bleaching greens. I buy the goods myself in the Irish markets and send them to Scotland to bleach, and some into the north of Ireland, and that is adding a very heavy expense to the manufacture.

Is there any distinction between the coarser linens manufactured in the south and west of Ireland, and the coarser linens manufactured in the north?—They are different articles altogether.

Which of the two is the preferable article?—They are for different purposes altogether.

In what does the distinction between the coarser linens of the north and the coarser linens of the south and west consist?—I do not know of any difference between the coarser linens of the north and those of Mayo; we use them promiscuously; those from Cork and that neighbourhood are made for different purposes altogether: the principal use, after bleaching them, is making them into white platillas. If they had the bleaching greens they could bleach in their own neighbourhood, and ship them at once, which would be a great expense saved.

Are you acquainted with the machinery which has been lately introduced into Ireland for scutching flax?—No, I am not.

Have you any doubt that the introduction of bleaching establishments in the south would contribute very considerably to the extension of the trade?—Not the least doubt of it.

Have you any suggestions that occur to you to give to the Committee, as to any steps that could be taken for the further encouragement of the linen trade in the south and west of Ireland?—No, I know of nothing but what I have noticed; there is nothing that strikes me at present.

Do you know what the value of linens exported from Ireland to this country or other countries may be, yearly?—No.

Did you never make any calculation; did you never see the public accounts to parliament?—No, I never did; I never concerned myself what were the whole exports. I export to Cadiz alone, 100,000*l.* besides to South America, in one year.

Are not the linens that are sent from Ireland made in imitation of platillas and britannias, and exported as such?—Yes, a great part of them are; and a variety of other names besides those.

You think Irish linens particularly suited to your imitation trade?—Certainly.

Did you ever calculate how many people might be employed by your purchase of the manufacture in Ireland?—I calculated in one year that there were fourteen thousand people employed.

Are you aware of the effect of transit duties upon foreign linens?—Yes, I think I ought to be aware of it.

What do you think of the effect of that, as a protection to Irish linen?—It is a great protection.

If that transit duty was taken off, would you continue to employ those fourteen thousand people in Ireland?—I certainly could not continue to employ them without disadvantage to myself.

Where would you go then instead of to Ireland?—To Hamburg.

You would employ there as many people as you used to employ in Ireland?—I certainly should lay out my money where it would produce the best profit.

The Committee understand you to say, that you think the growth of flax, with a view to the extension of the linen trade, ought to be very much increased?—It certainly ought to be very much increased: as it frequently occurs before the new flax is ready to spin, that the spinners are deficient in the article; they work up too much tow with their flax, and consequently injure the fabric of the linen.

Do you think that there is any chance of that manufacture being over done, that is, having a glut of goods by the increase that you propose?—I have no apprehension of it whatever, not the least.

Do you think there could be double the quantity of linen exported abroad as is now exported?—I think it would go on in a progressive proportion, that as you increase your manufacture, markets will be found progressively for it.

Mr.
Thomas Oldham.

(25 June.)

Do not you think that they could export them directly from the different ports of Germany, with the same advantage as by sending them through this country?—It would make too large a quantity to send to any market at one shipment.

You think that the only way that the German linens can be sent to a foreign market, is through the merchants of London?—With advantage to themselves, as linens are only exported as an article of assortment from this.

Is it not made in general an article of assorted cargo in England?—Certainly; they never ship entire cargoes of linen, it is always an assorted cargo.

Does the extension of the linen trade in the bleaching process depend at all upon the price of coals?—I believe not in Ireland, for very few of them use coals.

Do you think that if coals could be procured upon cheaper terms than they now are in Ireland, that the establishment of the bleaching mills might go on more extensively?—I am not able to speak to that, because that depends upon the local situation of the bleaching-mills entirely.

Do you think that the establishment of mills for the spinning of yarn, would tend to the extension of the trade in Ireland?—Upon my word I do not know that I can answer that question; for some parts of the trade that yarn so spun would be beneficial, for other parts of the trade it is of no importance whatever.

Does the price of coal, the cheapness or the dearness of coal, tend to promote or impede the encouragement of such mills?—The price of coals being higher in Ireland than they are in England, is certainly in favour of the English spinner.

Have you any doubt, generally speaking, that a reduction of the price of coal would promote the industrious occupation of the people of Ireland?—It would certainly be the means of assisting the manufactures of the country, that is taking it generally.

Do you consider that the introduction of regulations for the sale of flax, in the manner which you have described to take place with regard to foreign flax, would have a beneficial effect upon the industrious occupation of the people?—I certainly do; that was my evidence in the Linen Trade Committee, and I am still of the same opinion; I have no reason to alter it whatever.

Do you think that sending over samples of the German linens into those parts of Ireland where the imitation linens are not now manufactured, would be productive of good consequences?—I thought so, and of course got samples from Germany, and they were sent by the Irish committee to Cork.

Do you conceive that sending such samples into the other parts of Ireland would be productive of good consequences?—They do not require them at all; it is of no advantage to them whatever; they are well acquainted with it.

Are they well acquainted with the manufacture of the imitation linens in the west?—No.

Is it then to the south of Ireland that you chiefly look for the manufacture of those imitation linens?—It is confined to the north of Ireland at present; but what I recommended was, for it to be established in the south to give employment to the peasantry in that part of the country.

What is the distinction between the coarser manufacture of linen in the north and in the south?—The one is made of the tow, and the other of the flax; in the south of Ireland they make no distinction, but spin the tow and flax and all into one quality of yarn.

How long has the linen trade been supported by bounty?—Ever since I have had any thing to do with it.

How long is that?—About thirty-three years.

If by improvements in bleaching, or in machinery, you could diminish the cost of manufacturing linen, might not the bounty then be dispensed with?—Upon my word, I cannot say what may be done; but at present it cannot be done.

Will you have the goodness to give an answer, yes or no?—I do not know what improvements may be made; but in the present state it could not be done.

Do you think the regulation respecting stamping linens would be an advantageous one for England?—There are so few linens made in England, and none sold in public market, but only sold by manufacturers themselves, that there is no occasion for sealing in England.

Do you think it would be an advantageous regulation to introduce into our woollen manufactures in England?—I know nothing of the woollen manufactures.

Do you think it would be desirable to encourage the growth of any other article of raw produce in Ireland, besides flax, by means of premiums and bounties?—I cannot

not answer that ; I never dealt in any other article but Irish linens, and I keep all my capital principally employed in that trade.

Do you think it would be desirable to encourage any other manufacture in Ireland, besides linen, by means of premiums and bounties?—I certainly consider that establishing any manufacture in Ireland, by any means, would be beneficial to it.

Are wages paid in money, or in any other commodity, in the linen manufacture?—In the north of Ireland they are ; they are all bought by pieces in the market ; the weaver sells his own web, and he is paid for it on the day.

Do you employ any labourers?—I employ agents in the different brown markets, who are in constant attendance upon those markets, and buy those linens, and pay for them. Some of those linens I get over-brown, and bleach them here ; some I bleach in Scotland ; some I get bleached in the north of Ireland ; some are made up in imitations, in Ireland ; and some are made up here in imitations.

You know of no men employed by manufacturers at weekly pay?—Not that I know of ; I know of no such, except about Drogheda, and there they are.

Have linens fallen very much in price?—They have.

Do you think that the alteration in the value of money, in consequence of Mr. Peel's bill, has had any effect upon the price?—Not at all.

Has that had any effect in lessening the quantity of trade?—No.

Do you think it had any effect in producing the disturbances in Ireland?—No.

Are you acquainted with the state of the circulating medium in Ireland?—I have paid a good deal of money into Ireland, and I have paid guineas when I have got twenty-eight shillings for them.

Can you state to the Committee whether there has or has not been a very great reduction in the circulating medium of Ireland, within the last few years?—Of course, of every article, either of produce or manufacture ; being so much lower in price, both in England and Ireland, there is a great reduction in the circulating medium.

Then do you not connect the fall of prices in linens with the reduction of the circulating medium?—Not at all ; the fall in the price of linens is occasioned by meeting the German and Russian linens in the foreign market.

Is the Committee to understand that the withdrawing of a certain portion of the circulating medium has had no effect whatever?—It is the reduction of price that has withdrawn the circulating medium.

Are you aware of the circumstances of the south and west of Ireland at present, with respect to circulating medium?—No, I know nothing of the circulating medium ; all I know is, that when they buy the goods for me, they pay for them ; and can readily get cash for bills at twenty-one days sight, drawn on me.

You know nothing of the state of the circulating medium of the south and west of Ireland?—No, nothing further.

Have you not said before, in answer to a question, that the withdrawing a great portion of the circulating medium had not contributed to the distresses of Ireland?—They are not connected together, so far as I see.

To what other causes do you impute the withdrawing of the circulating medium?—I impute it to the prices of every article falling, both in this country and Ireland : for instance, I cannot apply the same capital that I used to apply ; the price of linens is so much lower, that I must sell a much larger quantity than I did to produce the same amount.

The value of linen is changed very much within the time you recollect?—Yes.

Upon what principle do you think the bounty was arranged when it was first laid on ; the bounty, you know, goes by scales of linen under a certain price per yard?—Yes, but the scale is of little importance ; the general export is from 6*d.* to 18*d.*

Do you think there has been such alteration in the linen as to bring within the bounty a different class of linens from that which was intended when it was laid on?—I believe that linens are now about the same price as when the bounty was laid on ; they increased very much in price in consequence of the ports of the continent being shut, and the whole of the linen trade kept in Ireland and Scotland ; that advanced the prices, of course, very much.

Then you think the effect of the change of prices was, to bring under the bounty a lower class of linens than was intended?—No, I do not think there was any thing of that kind, that the bounty was laid on from a certain price, but during the war the greater part of the linens got above that price.

Mr.
Thomas Oldham.

(25 June.)

But the lower class of linens also advanced in proportion?—Yes, but it is very trifling to the proportion of what has come down back again.

The Committee understand from you, that the quantity of linen below the bounty is very small?—Very small.

Do you think the same regulations with respect to stamping of linen ought to apply to English manufacture, as apply at present to the linen manufacture in Ireland?—I will tell the Committee what my opinion is of the present bill respecting the linen trade in Scotland. There are certain manufacturers in Scotland who manufacture very largely, and who sell their goods themselves; such men require no public seal: the goods that are taken by single pieces and sold in the public market, the man who buys them he does not know the seller; these goods ought to be sealed, or otherwise you have no redress, in case there is any thing wrong.

Are you not aware that that is the general mode of manufacturing in Ireland; that the goods are manufactured at the manufacturer's house, and afterwards brought in in single pieces in the market to sell?—I am quite aware of that; and without that sealing we could not have confidence to buy them.

In England the character of the manufacturer is a protection?—In England they are manufactured quite differently; the man that employs the weavers in England, gives them the yarn, which they return manufactured, and therefore you have a responsible man that you buy the linen from.

But in Ireland the inspector is the responsible man?—He is.

Have you ever at any time known any injuries sustained from the markets where the linens are sold, in consequence of their having been improperly and negligently inspected and sealed?—I never met with any thing of the kind myself.

Have you ever heard of it?—I have heard of it, but I never saw it.

Generally speaking, are you not, as a great purchaser of linen, satisfied with the conduct of the local inspectors?—Quite so, in the north of Ireland.

Does your answer to that question apply to the south of Ireland?—It does not.

It is to the seal-masters you direct your answer; you say you are satisfied with the conduct of the seal-masters?—Yes.

Have you been in Ireland this year?—I have not; I was last year in Ireland, but I have not been this year yet.

Have you any recollection of the highest of your own purchases, during the war, in Ireland?—About 140,000*l*.

That is the highest?—Yes.

What may it be now?—I suppose now it is about 90 to 100,000*l*.

Does that sum of from 90 to 100,000*l*. which you at present invest in Irish linen, represent the same quantity of linen which was formerly purchased?—Certainly more; that is, I get more yards for 100,000*l*. than formerly for 140,000*l*.

What is the value of your exports generally in linen?—I believe the highest we have ever had was 120,000*l*.

Is the export chiefly to North and South America, or to different parts of Europe?—My principal export has been to Cadiz and Gibraltar, and from thence, in part, to Vera Cruz and to South America and various places.

Do you think that the South American demand for linens will be increased?—If they get settled in South America they will.

It is only fine linens is it?—From the very coarsest to the very finest; but the principal part of the linen has the bounty: say from 6*d*. to 18*d*.

You say that the want of bleach greens in the south of Ireland, is very injurious to the interests of the linen manufacture?—Yes, and I gave my reasons, because if the linen is to go to Scotland to be bleached, the expense attending that going is equal to the profit.

Is there not also a deficiency of bleach greens in the west of Ireland?—I do not know.

Is it not as great in the west of Ireland as in the south?—No, it is not so great.

Have you been in the north of Ireland?—Yes.

Are you acquainted with the habits and mode of living of the peasantry in that part?—Yes, I am pretty well acquainted with them; I used to go round that country every year.

Do you think it would be an improvement in the mode of carrying on the linen manufacture in Ireland, if the present mode was changed, and large manufactories were established in towns, instead of manufactories being distributed all over the face of the country amongst the farmers?—Let it be as it is; you cannot improve it.

Could

Mr.
Thomas Oldham.

(25 June.)

Could not it be manufactured cheaper?—I do not think it could.

Do not you perceive a great advantage in the habits of the people of those districts in the north, where the linen manufacture is carried on in the greatest perfection, above those districts in the north where the linen manufacture has been barely introduced?—Yes.

You have been in the neighbourhood of Lisburne?—Yes, I have been in most towns in Ireland where linen is sold.

What is your opinion of the population of that part?—I think it could not be better; there is no manufacture that is so important as the linen manufacture; there is nothing that is so great a benefit in a country as the linen manufacture, because the only thing you import is the seed; in the cotton manufacture the material is imported.

Is the peasantry of those parts of the north of Ireland, where the manufacture is carried on, happy, industrious, and contented?—Yes, as far as I know; for I never saw any thing to the contrary.

Are you acquainted with the peasantry in the parts of Ireland where the linen manufacture does not exist?—No, I am not.

Have you been a great deal over Europe?—No, I have not.

Have you been in Flanders?—No.

Mr. James Connelley, called in; and Examined.

WHERE do you reside?—In Dublin.

Have you resided long in Ireland?—All my life-time I have resided in Ireland.

Are you acquainted with the state of the peasantry in many parts of that country?—I have had a considerable deal to do in the corn trade in general, particularly as a manufacturer in flour and malt; having very extensive flour mills.

Are you acquainted with the state of the population in the agricultural districts in Ireland?—Yes, I think I am, tolerably well.

What parts of the county are you best acquainted with?—The county of Carlow principally; I have been connected thirty years with it on a most extensive scale; and I have been also in the county of Meath for rather more than that; and I have also been connected with a very extensive concern of the same kind in the counties of Meath and Westmeath.

Can you inform the Committee what the generality of wages of labour, in the counties of Carlow and Meath may be?—I really cannot precisely say; I know it is very low; I believe our labourers, in county of Carlow, get something about 1s. a day.

You do not consider 1s. a day to be the measure of wages of a common labourer of the country, do you?—I really cannot answer that question.

Are not the individuals, to whom you pay 1s. a day, a superior description of labourers to those that are employed in the general agriculture of the country?—They are of a superior description.

Do you not believe that 1s. a day is infinitely beyond the average payment to agricultural labourers?—I am satisfied it is.

Have you ever paid more than 1s. a day to skilful labourers employed by you?—Really my partner does the whole business there; I am engaged in Dublin; but I do believe that we have paid them at periods more than that; but not, I believe, for some years back.

Can you state what was the highest sum that you have ever paid?—I really cannot, for labourers of that description.

Can you inform the Committee at what time a reduction in the price of labour took place?—A material reduction took place, I believe, since the great depression on all agricultural produce.

In those parts of Ireland with which you are acquainted, do you consider that there are sufficient means of employment for the poor?—I am satisfied there are not.

Is there a considerable proportion of the poor population of the country wholly without employ?—I believe there never was more than at this moment; so far as I know from my own observation; I never knew such a number of people looking for employment in vain.

Is there a great anxiety on the part of the people themselves to obtain employment?—A very considerable anxiety.

Even at very reduced wages?—Even at very reduced wages.

Mr.
James Connelley.

(25 June.)

To what do you attribute the increased number of people who are now without the means of employ?—I believe there are many causes; but I think the great reduction which took place in all agricultural produce has mainly occasioned the farmers, who used to employ labourers, to have a great portion of their labour now done by their families; their produce being so low as to disenable them to pay for it. The gentlemen of the country also, not having got in their rents, are from that cause obliged to diminish the number of their labourers.

Have those causes produced a very great extent of distress in those parts of Ireland with which you are acquainted?—No question of it.

Is there any manufacturing industry introduced into those parts of Ireland with which you are acquainted?—None that I know of; but I am not competent to speak definitively upon the subject.

How do the peasantry in those parts of Ireland provide themselves with clothing; is it of domestic manufacture, or is it imported from other countries?—All they have I believe to be of domestic manufacture.

Are you aware whether the females in those parts of the country are acquainted with the manufacture of wool and flax?—I do not know that they are; but this I am satisfied of, that your attention could not be better directed than to get such employment for them, and I believe they are all anxious to work, had they the means; were this object effected, it would tend, in my opinion, essentially to the morality and industry of the people.

Is there a cloth manufactory at Carlow?—I know of none; there is a blanket manufactory in the county of Kilkenny upon a very extensive scale.

Are you aware of any deficiencies, or of any obstacles which exist, which prevent the extension of domestic manufacture in those parts of the country with which you are acquainted?—No, I do not.

Do you know whether there is a sufficient provision of implements?—I am satisfied there is not; and if there was, it would be of the utmost importance to the people.

Have you known any application made by the peasantry of the country in order to obtain a supply of wheels and reels?—I really cannot speak to that; but I believe if they were generally dispersed through the country, I do not know any one thing that would do more good.

The information you have given is equally applicable to the counties of Carlow, Meath, and Westmeath?—Certainly.

Does the same distress and want of employment exist in the county of Carlow that exists in Meath and Westmeath?—Yes; I saw as great distress in the county of Carlow as I ever saw any where, or at any time in my life. During the time of the scarcity, we were obliged to give breakfast to between eighty and a hundred persons, also advanced money for making roads for the sole purpose of employing the poor people.

Does it appear to you that the population is as dense in Carlow as in the other counties?—In my opinion it is.

Part of it has been disturbed, has it not?—Indeed I do not know as to that.

Generally speaking, is there not a better system in the management of farms in the county of Carlow, than in most other districts?—I think there is in general.

The farms are of a larger size?—The farmers are in general better, and the quality of the produce is better also.

The inhabitants of Carlow are mostly agricultural?—Yes.

Do you think that if manufacture were introduced into that county, it would be likely to extend?—Certainly, it would be as eligible a part as can be found; there is a large population, there is water, and every thing that can conduce to an establishment of that sort, to make it useful to the country and profitable to the person who carries it on.

Is the system of agriculture in Carlow, the improved system or the old system?—I do believe the county of Carlow has a very improved system, the farmers being of a superior description, and the land in general being very good.

Are you sufficiently informed of the circumstances of those counties you have referred to, Carlow, Meath and Westmeath, to state to the Committee whether it is the usage of those counties to pay the agricultural labourer his wages, or whether, generally speaking, he is not a tenant, bound to give a great portion of his labour to his landlord?—Sometimes the one system prevails, sometimes the other; the people we have employed in the county of Carlow, are generally paid in money, but I understand, and do believe it to be the fact, that in several other cases they pay for their garden and cow, and that is deducted out of their wages.

In point of fact, as far as you are informed, is it not the usage in those parts of the country with which you are acquainted, that there is no money passing in the shape of wages between the landlord and the tenant?—There is no doubt that that is sometimes a practice followed in the country; but they must have money to do some things, because they could not exist without it.

Mr.
James Connelley.

(25 June.)

Do you not think the introduction of domestic manufactures might take place in the county of Carlow, without any interference with agricultural engagements?—No doubt of it.

In those parts of Ireland with which you are acquainted, is it the habit of the peasantry to quit their homes in search of employment?—No, I do not know that this is the case in any of the parts I am acquainted with, but in other parts of the country I believe it to be sometimes practised.

Have you been in Ireland during the late distress?—Yes; I have.

What do you conceive to have been the cause of that distress?—I conceive it to be really want of employment; provisions were very cheap and in great abundance, it therefore cannot be attributed to any thing else.

Was there not a very considerable failure in the potatoe crop last year at the time of the distress?—I really do not think there was in those counties to which my evidence has more particularly referred.

Did you ever know a great importation of potatoes into Ireland?—Yes, I do know there was, but not into those counties of which I have been speaking.

Was there a great want of money in consequence of the failure of banks?—There is no question of that.

Was there not a failure of the potatoe crop in many districts in Ireland that year?—I think there was; but nevertheless there was a great abundance of food, but no means of getting it.

Of what food?—Of wheat, and of oats, and of meal, I believe.

Are those articles the general food of the peasantry in Ireland;—Oats and oatmeal form a great part of their ordinary food.

Is the great body of the population of Ireland in the habit of buying their food?—No.

How are they supplied with their food?—Generally from produce they raise in their own gardens, potatoes, &c.

Have you any doubt that there was a great failure in the potatoe crop of the year before last, previous to the distress?—I really have no reason to think so, in the counties I have been speaking of.

Do you know what the price of potatoes was in the market of Dublin, during the period of distress?—I do not.

You do not know whether it was higher or lower than the usual price of potatoes?—I do not; I have nothing upon my mind from which I could give in answer to that.

Your observations are applicable only to the counties with which you are acquainted? Yes, there never was a greater abundance of food than there was at that time; I can speak to a certainty for thirty-five years.

The abundance of food was of that description which the peasantry are not in the habit of using?—Generally so.

Do you conceive that a more enlarged means of employing the people at that time would have enabled them to purchase this food?—No doubt it would have been of the utmost use.

In your different trades, have you experienced a considerable reduction of business since the fall in agricultural produce?—Yes, we have a considerable reduction in our breweries.

Have you employed as many men now as you did before the fall in agricultural produce?—In the lines of mills and malt-houses we do, but not in the breweries.

Is there as much corn or produce obtained from the land now as was obtained from the land before the fall?—I should imagine there was; but that would not continue if the prices had continued as low as they were.

To obtain that continuance, is not the same quantity of labour necessary?—Certainly.

Has there been any falling off in the linen manufacture of Ireland?—I cannot tell.

If there has been no diminution in the number of men employed in manufactures nor in agriculture, to what do you ascribe the want of employment of which you have spoken?—I believe I have not been correct in what I mentioned first. I was asked whether the same number of people were employed; to which I answered, that there

Mr.
James Connelley.

(25 June.)

were not, because there is a variety of things that have been given up for want of the means to carry them on; and though the land must be cultivated, even in the cultivation of that they diminish the number of hands as much as they possibly can for want of means to employ them, and also avoid doing many things which they otherwise would do in the employment of labourers, such as road-making and things of that sort.

In point of fact, you mean to state that there are many means which have been given up, even though agriculture might have employed as many?—Yes.

Will you mention what particular trades have been given up?—I do not talk of trades having been given up; what was asked me was respecting agricultural labourers.

You have said, that it would be very advantageous to Ireland, and to the employment of the women and children, if a great number of wheels and reels were given to them?—I do think it would.

What would they produce with those wheels and reels?—They would produce linen and woollen for their domestic purposes.

Would they produce those things for sale, or for their own domestic use?—For their own domestic use, in a great degree.

Even supposing that what they manufactured was confined to domestic use, would not the habits of such manufacture improve necessarily their industry, their cleanliness, and in other respects be advantageous?—Beyond any thing; I look more to it than any thing else for the peace of the country. Really, at this moment, the females of the poor labourers are a complete burthen to them.

Would it not be necessary to furnish flax and wool, as well as wheels and reels?—No doubt of it; but they would pay for the materials; that is, they would pay for the wool and for the yarn with which they were supplied.

Do you know any thing of any charitable loans having been made in the part of Ireland with which you are acquainted?—No, I do not know of any.

Do you think such a system would be advantageous?—I do.

What amount of grant would you think necessary for government to provide to employ the unemployed people in Ireland at this time?—I could not possibly speak to that.

Could you form any estimate of the amount that would be required in the particular district with which you are acquainted?—I am sure a very moderate amount would do immensity of service; and if it was once set going, I think it would spread to an extent, and with a rapidity beyond any thing you can conceive.

Would the people be able at some future time to repay those loans?—I have no doubt that they would.

Would they be able to pay the interest on those loans?—I think there can be no doubt of it.

Could they either pay the principal or the interest without selling some portion of the commodity which they manufactured?—The idea that I had upon my mind was, that this was done for domestic use only, for the purpose of employing and clothing their families; I had no idea of carrying on that to an extent so as to be able to sell; but I believe, if they went to the manufacture of linen and yarn, they would be enabled to sell a surplus over and above their own wants, the disposal of which would in a short time liquidate both interest and principal.

If they did not sell a portion of the commodity they produced, how would they be able to repay the advances made to them?—They certainly could not.

Then you contemplate the sale of some portion?—Certainly, if principal and interest is to be paid.

Do you think there would be a market for the commodity if all the people were so employed?—I should imagine there would be market for any thing they could possibly do in that way.

Who would buy it?—It is not to be supposed that the farmers and gentry can remain in the distress they are now in, and it would be very natural that they should buy those things when their circumstances improve.

Do you not think that the sum requisite to employ all the people now out of employment, would be much larger than any government could possibly spare?—Such is the extent of the want of labour, that I should not think it possible that any government could do it.

But you think an advance might be made large enough to afford considerable relief?—Employing the women in spinning would be of great use to the country; as to employing the people, that is a subject too deep for me.

Are

Mr.
James Connelley.

(25 June.)

Are you aware what the price of a spinning-wheel is?—No, I am not.

Supposing the price of a spinning-wheel to be 6 or 7 s. only, from your knowledge of the poverty of Ireland, is not the want of a spinning-wheel, in many instances, a great bar to the introduction of the trade?—No doubt of it.

Then, in such cases, the advance of 6 or 7 s. would enable females who are now unemployed to be profitably employed?—Certainly, to some extent.

Are you not aware that Carlow, Meath and Westmeath, are amongst the best cultivated parts of Ireland?—Carlow and Meath are, and a great part of Westmeath (not many years since) has become an agricultural county.

How are those counties circumstanced with respect to resident gentry?—The county of Carlow has been well circumstanced in that respect, and so, I believe, is the county of Meath; as for the county of Westmeath I doubt whether that is so; there is a part of it that, I believe, is, and another part that is not.

Then the observations that you have made with respect to the want of employment would apply more forcibly in those parts of the country where there are fewer residents, and a less improved system of cultivation?—Undoubtedly.

You say that an advance of public money in those districts with which you are acquainted, would be a beneficial measure; do you think that the gentlemen of the country would consent to become security for such advance?—I really cannot say; but I should think they would have no difficulty in making themselves accountable, provided the disposition of the funds was in their own hands.

And they would become responsible both for principal and interest to government?—I would myself, on that principle; that is, provided the interest was made as low as possible.

Are you aware of any very considerable reduction in the circulating medium of Ireland, which has taken place within your recollection?—There has been a very considerable reduction.

Have there been many failures of country banks in that county?—There have been very heavy failures.

Do you not conceive that that alteration in the currency of the country has contributed very considerably to the augmentation of the distress?—I am sure it must have had a very strong effect upon it.

In what way has it produced that distress?—By withdrawing so much of the circulating medium of the country: in proportion as the circulating medium is reduced, the employments must necessarily reduce with it.

Are you at all acquainted with the state of the province of Connaught?—Not at all.

You have never heard of the distress which has been occasioned by the failure of the banks?—I have heard of the distress that has been occasioned by the failure of all the banks.

Can you give the Committee any information as to the state of clothing of the inhabitants of Carlow, Westmeath and Meath?—I think they are generally better off in that way than in many other districts.

Have you observed that they are not so well clothed, nor so comfortable as they were; and whether, for the last year or two, they are more squalid and naked?—There is a great alteration in their appearance, in every sense of the word; there is a manifest and evident deterioration.

Of what materials are the clothing of the population made?—Frieze is generally what the men wear; frieze coats; they have nothing but the very plainest article that can be made.

Do they wear coarse linens?—Yes; the linen they do wear is very coarse indeed, and the women are wretchedly clothed.

Can you state what the price of clothing in those parts of Ireland is?—I do not know.

Is it dear, or is it cheap?—I believe it to be very cheap.

Do you suppose that there is any deficiency in the supply of clothing?—No.

Do you think there is as much manufactured by the inhabitants of the country, as is used by them?—I do believe there is; but the clothing must have diminished materially, because they are so long before they can afford to renew any thing.

You think there is as much manufactured there, as is generally used by the peasantry all the year?—I do.

Then where would you expect to find a market for the produce of the labour of the people?—I am not competent to speak to that, not being a resident in the

Mr.
James Connelley.

(25 June.)

country; I think you could not do a better thing than to set the poor females of the country to work, and make them useful to their husbands and families.

You have stated that you would willingly allow your property to become security to government for the re-payment of any money that might be advanced for the employment of the poor in Ireland; would you allow your property to be security for more than what would be advanced for the employment of those people, upon your own property?—I was asked whether the gentlemen of the country would do it; I said I could not answer that question, but I would do it on my property for the benefit of the people.

Would you allow your land to be security for monies advanced for the employment of persons upon other persons properties?—I certainly would not.

If the money was advanced by you, you would like to have the disposal of it?—Certainly; and on no other terms would I become responsible.

Is capital so scanty in Ireland, that if such was your object you could not get it at this moment, at moderate interest?—No, I could not; I premised that the interest should be as low as possible, lower than it can be obtained in Ireland.

In point of fact, the gentlemen of the country generally are without means of affording employment to people, are they not?—Yes.

Do you recollect any period in which the landed proprietor of the country has been in the state of destitution in which he at present is?—Never.

Robert Owen, Esq. called in; and Examined.

Robert Owen,
Esq.

HAVE you lately been in Ireland?—I have.

How long were you in that country?—Between seven and eight months, from the beginning of October to the middle of May.

What were your objects in going to that country?—The first object I had in view was, to ascertain what were the real causes of the extraordinary distress, which was described to prevail in that country in a period of profound peace, and while there existed a superabundance of capital and skill in the British empire; and the second object was, to discover whether those powers could not be applied to remove the evils which afflicted so large a portion of our fellow creatures.

Have you succeeded in either or both of those objects?—The conviction on my own mind is, that I have succeeded in both.

To what cause or causes do you attribute the distress that has prevailed to such a great extent in Ireland?—To the want of means to enable them to apply their industry for their own benefit, and to the existence of a system which continually creates and fosters religious animosities.

Are those causes to which you have referred, in your opinion, removeable?—I think they are.

By what means?—By providing judicious and productive employment for all those of the working classes who are at present unoccupied; and by a system of training and education, which experience has proved to be the most beneficial.

Are you of opinion, that it is practicable to provide such a system of enlarged employment for the population of Ireland?—I am.

In what way?—I would employ them by a peculiar system of arrangements, the particulars of which, with the permission of the Committee, I will put in to be entered upon the minutes. The system to which I refer, is entirely different from that under which the Irish peasantry now exist; I consider, that it is impossible they can be employed advantageously for themselves or their country, while they remain under the extraordinary circumstances under which I witnessed them to be, only a few months ago.

Will you state to the Committee your view of the condition of the people of Ireland, as it appeared to you during your visit?—Generally speaking, the greater part of the Irish peasantry appears to be in the lowest state of degradation.

What part of the country did you visit?—The greater part of the counties south of Dublin, and also from Dublin to Belfast; of course, there is a material distinction to be found in their appearance in one county, from what is exhibited in another.

Mention the course of your tour?—From Dublin to Kilkenny, Waterford, Cork, Kerry, Limerick, Tipperary, King and Queen's County, Clare, and from Dublin to Belfast.

Through what counties to Belfast?—The direct road,

The

335

Robert Owen,
Esq.

(25 June.)

The Committee want to know the counties from which you derive your knowledge?—Meath, Down.

Have you been in the province of Connaught?—No. My object was to visit chiefly that part of the country where I had heard there had been the greatest disturbances, I therefore passed several months in the southern counties, and passed hastily through the northern part of Ireland.

Can you state specifically, what are the measures which you would recommend to be adopted in the present state of Ireland, for the removal of the ills to which you have alluded?—Holding it to be a sound principle in political economy, that the working classes should be so employed as to produce the greatest amount of wealth at the least expense of labour, and with the most comfort to themselves and benefit to the public, I recommend the adoption of improved arrangements for the employment of the people, for their domestic economy, for the training and instruction of their children, and for their general conduct and government; the details of which arrangements are contained in papers, which I now beg to present to the Committee, and regarding which, I am ready to give any further explanation that may be required.

Besides the papers which you now propose to deliver in, have you any general abstract of the observations that occurred to you during your visit?—I have.

Is it prepared by yourself?—It is prepared by myself, assisted by a very intelligent and experienced agriculturist, who accompanied me during the tour I made.

Can you furnish such an abstract to the Committee?—I can; the object of the statement is to show, what a thousand individuals of all ages can produce upon the soil and in the climate of Ireland. Supposing in the one case, that the population should be employed entirely in agriculture, and in the other three cases, in different proportions between agriculture and manufactures; but in all cases that there should be a sufficient proportion of agriculture to provide a thousand individuals with all the agricultural produce they should require.

Does this statement to which you now allude, contain the details of the plan to which you have referred the Committee?—There are none of the general principles explained in that statement, it merely consists of calculations, showing the results which would arise from such an application of the industry of Ireland.

Will that communication of itself be sufficient to put the Committee into possession of your plan, without the papers to which you have referred?—Certainly not, but it will be fully explained by the papers which I will deliver in; with those papers, with the permission of the Committee, I will also deliver in a report which I made some years ago, and which will give a pretty full explanation of the principles upon which I proceeded in the calculations contained in the statement above referred to.

Will you have the goodness to deliver in the papers, statement and report, to which you have referred?—I will.

[*The witness delivered in certain papers.*]

RULES AND REGULATIONS OF A COMMUNITY.

It is proposed,

1. That the community shall consist of persons who have agreed to mutually co-operate with their labour and skill, in measures for producing, distributing, and enjoying in the most advantageous manner, a full supply of the necessaries and comforts of life, and for securing for their children the best physical and intellectual education.

2. That at the commencement, the number of persons shall not exceed five hundred, including their families.

3. That as it is of great importance that the community should produce within itself a full supply of the first necessaries of life, there shall be attached to the establishment a sufficient extent of land to render it essentially agricultural.

4. That a village, to be situated as near the centre of the land as local circumstances may permit, be built according to the plan and elevations given in the annexed engravings.

In this village the dwelling-houses, dormitories, &c. form the sides of a large square, in the centre of which are placed the requisite public buildings, surrounded by public walks and exercise grounds. This form has been adopted as giving superior accommodation to the dwelling-houses, and admitting the application at the least expense of scientific improvements in all the departments of domestic economy.

5. That the manufactories, workshops, granaries, stores, washing and drying-houses, be placed at the most convenient distance beyond the gardens which surround the village, and that the farm-offices be situated according to the localities of the land.

6. That whenever the capital, advanced by its own members, shall have been repaid, and the education of all be sufficiently advanced, the management of the establishment shall be

Robert Owen,
Esq.

(25 June.)

confided to a committee, composed of all the members between certain ages; as for example, between forty and fifty. But that until such period the committee shall consist of twelve persons, to be elected at an annual general meeting; eight to be chosen from among those members who have advanced capital to the amount of 100 *l.* or upwards, and four from the other members. The committee to be empowered to elect the treasurers and secretaries.

7. That the treasurers be empowered to receive all monies due to the community, and pay its disbursements, on orders signed by the secretary. That they balance and report their accounts every week to the committee, who shall appoint two of their number to examine and pass them under their signatures.

8. That the secretary be directed to keep a regular detailed daily statement of all the accounts and transactions of the community, and that such statement be presented weekly to the committee, and submitted to the examination of two of their number, who shall pass it under their signatures, with such observations as may occur to them.

9. That the books of accounts and transactions of the society be open to the inspection of all its members.

10. That the business of the community be divided into the following departments:—

1. Agriculture and gardening.

2. Manufactures and trades.

3. Commercial transactions.

4. Domestic economy; comprehending the arrangements for heating, ventilating, lighting, cleaning, and keeping in repair the dwelling-houses and public buildings of the village. The arrangements connected with the public kitchens and dining-halls; those for the furnishing of clothes, linen and furniture, and for washing and drying, and the management of the dormitories.

5. Health; or the medical superintendence of the sick, including arrangements to prevent contagion or sickness.

6. Police; including the lighting and cleansing of the square, the repairing of the roads and walks, guarding against fire, and the protection of the property of the community from external depredation.

7. Education; or the formation of character from infancy; to this department will also belong the devising of the best means of recreation.

11. That for the general superintendence of these departments the committee appoint sub-committees from their own number, or from the other members of the society; each of the sub-committees shall lay a weekly report before the committee, to be examined and passed, with such observations as may be deemed necessary.

12. That should there not be at first a sufficient number of persons in the community fully competent to the management of the different branches of industry, which it may be desirable to establish, the committee be empowered to engage the assistance of skilful practical men from general society.

13. That in regulating the employments of the members according to their age, abilities, previous acquirements, and situation in life, the committee pay every regard to the inclinations of each, consistent with the general good; and that the employment be in general so ordered, as to permit every individual who may be so disposed, to occupy part of his time in agriculture. Great facilities are afforded to agriculture by the power which the community will always possess of calling out an extra number of hands at those times and seasons, when it is of the utmost importance to have additional aid.

14. That as under the proposed arrangements every invention for the abridgement of human labour will bring an increase of benefit to all, it be a primary object with the committee to introduce to the utmost practical extent, all those modern scientific improvements, which if rightly applied are calculated to render manual labour only a healthy and agreeable exercise.

15. That the first object of the community be, to produce a full supply of the necessities and comforts of life for domestic consumption, and, as far as localities will permit, directly from their own land and labour.

16. That in regard to domestic consumption, each member of the community shall be fully supplied with the necessities and comforts of life.

17. That within the community, all the members be equal in rights and privileges, according to their respective ages.

18. That to avoid the evils arising from a system of credit, the commercial transactions of the community be conducted for ready money only; that these transactions, on the part of the community, be always performed in good faith, and without the slightest attempt to deceive buyer or seller; and that when any individuals with whom they deal, show a disposition to impose upon the community, all dealings with such individuals shall from that time cease.

19. That the surplus proceeds of the united exertions of the community, which remain after discharging rent, interest, taxes, and other expenses, be regularly applied to the liquidation of the capital borrowed upon the establishment; and when this debt is cancelled, it is proposed that the future surplus be invested, to form a fund for the establishment of a second community, when the increased population of the first may require it.

20. That in the domestic department, the following arrangements and regulations be adopted:—

1. The heating, ventilating and lighting of the dwelling-houses and public buildings shall be effected according to the most approved methods.

Robert Owen,
Esq.

(25 June.)

2. An ample supply of water shall be provided and distributed to each building for domestic purposes, and as a security against fire.

3. Provisions of the best quality only shall be cooked in the public kitchen; and it shall be a special object to those persons who have the direction of this department, to ascertain and put in practice the best and most economical means of preparing nutritious and agreeable food. Any parties being ill, or desirous of having their meals alone, may have them sent to their private apartments.

4. The furniture of the dwelling-houses, dormitories and public buildings (as far as the same be provided out of the public funds), shall be devised in reference to intrinsic use and comfort; a similar regulation will apply to the clothing of the community. Among the children very essential improvements may be introduced, which will not only save much useless expense, but be the means of increasing, in a very high degree, the strength of the constitution.

5. The dormitories designed for the children above two years of age, and those for the youth of the community until the period of marriage, shall be divided into compartments, and furnished with the accommodations suited to the different ages.

21. That the employments of the female part of the community consist in preparing food and clothing; in the care of the dwelling-houses, dormitories, and public buildings; in the management of the washing and drying; in the education, in part, of the children, and other occupations suited to the female character. By the proposed domestic arrangements, one female will with great ease and comfort perform as much as twenty menial servants can do at present; and instead of the wife of a working man with a family being a drudge and slave, she will be engaged only in healthy and cleanly employments, acquire better manners, and have sufficient leisure for mental improvement and rational enjoyment.

22. That it be a general rule, that every part of the establishment be kept in the highest state of order and neatness, and that the utmost personal cleanliness be observed.

23. That the following objects and regulations, connected with the department of health, be attended to and adopted:—

1. That on the first appearance of indisposition in any of the members, immediate attention be given to it, and every possible care be taken of the patient till complete recovery; the prevention of serious complaints being always far more easy, than to effect a cure after the disease has fixed itself in the constitution.

2. The complaint of indisposition by any individual, shall place him or her on the invalid list, on which the patient will remain until the medical attendant pronounce a complete recovery.

3. The arrangements of the apartments for the sick, shall be such as to afford every possible comfort to patients, and provide much more effectual means of recovery than their private dwellings could admit of.

4. Removal to the apartments for the sick, shall be at the option of the individual.

5. As the health of the community may be materially improved or injured by the interior plan of the dwelling-houses, by their situation with respect to other buildings, by dress, food, employment, the temper and general state of the mind, and by various other circumstances, the attention of the sub-committee of this department shall be continually directed to these important considerations.

24. That as the right education of the rising generation is, under Divine Providence, the base upon which the future prosperity and happiness of the community must be founded, the committee shall regard this as the most important of all the departments committed to their direction, and employ in its superintendence those individuals whose talents, attainments and dispositions, render them best qualified for such a charge.

The children of the community will be educated together, and as one family, in the schools and exercise grounds provided for them in the centre of the square, where they will at all times be under the eye and inspection of their parents.

By properly conducting their education, it will be easy to give to each child good temper and good habits, with as sound a constitution as air, exercise and temperance can bestow; a facility in reading, writing, and accounts; the elements of the most useful sciences, including geography and natural history; a practical knowledge of agriculture and domestic economy, with a knowledge of some one useful manufacture, trade or occupation, so that his employment may be varied, for the improvement of his mental and physical powers; and lastly, a knowledge of himself and of human nature, to form him into a rational being, and render him charitable, kind and benevolent to all his fellow creatures.

25. That when the youth of the community shall have attained their sixteenth year, they be permitted either to become members, or to go out into general society, with every advantage which the community can afford them.

26. That intelligent and experienced matrons be appointed to instruct the young mothers in the best mode of treating and training children from birth until they are two years old, (the age at which it is proposed to send them to the schools and dormitories,) that their constitutions, habits and dispositions may not be injured during that period.

27. That in winter and unfavourable weather, a sufficient variety of amusements and recreations, proper for the members of such a community, be prepared within doors, to afford beneficial relaxation from employment and study.

28. That as liberty of conscience, religious and mental liberty, will be possessed by every member of the community, arrangements be made to accommodate all denominations with convenient places of worship, and that each individual be strongly recommended to

Robert Owen,
Esq.

(25 June.)

exhibit, in his whole conduct, the utmost forbearance, kindness and charity, towards all who differ from him.

29. That in advanced age, and in cases of disability from accident, natural infirmity, or any other cause, the individual shall be supported by the community, and receive every comfort which kindness can administer.

30. That on the death of parents, the children shall become the peculiar care of the community, and proper persons be appointed to take the more immediate charge of them, and, as far as possible, supply the place of their natural parents.

31. That the committee of management shall not be empowered to admit a new member without the consent of three-fourths of the members of the community, obtained at a general meeting.

32. That although at the period when all the members shall have been trained and educated under the proposed arrangements, any regulations against misconduct will be unnecessary, and although it is anticipated that the influence of these new circumstances upon the character of the individuals, whose habits and dispositions have been formed under a different system, will be sufficiently powerful to render any serious differences of rare occurrence amongst them, yet, in order to provide against such, it shall be a law of the community, that when differences arise, they be referred to the decision of arbitrators, to be elected by the society, who, after hearing the parties, shall decide upon the case.

33. That if the conduct of any individual be injurious to the well-being of the community, and it be so decided by three-fourths of the members assembled at a general meeting, the committee shall explain to him in what respect his conduct has been injurious, and at the same time intimate to him that, unless the cause of complaint be removed, they are instructed to expel him from the community.

34. That any member wishing to withdraw from the community be at full liberty to do so at any time; and the committee shall be authorized to allow any such gratuity as the circumstances of the case may require.

35. That the committee form arrangements, by which all the members shall enjoy equal opportunities of visiting their friends elsewhere, or of travelling for information and other objects.

36. That the committee appoint duly qualified persons to travel from time to time to collect scientific and other information for the benefit of the community.

37. That in order to extend the benefits of a system of union and co-operation, which is applicable to mankind in every part of the world, measures be adopted by the committee to disseminate a knowledge of the new principles and arrangements.

38. That as this system is directly opposed to secrecy and exclusion of any kind, every practicable facility shall be given to strangers to enable them to become acquainted with the constitution, laws, and regulations of the community, and to examine the results which these have produced in practice.

39. That the committee be charged with the duty of communicating on all occasions to the government of the country, an unreserved explanation of the views and proceedings of the community.

The following Paper was read:—

The population of Ireland, according to the last census, is about seven millions; and of Great Britain, about fifteen millions; making together, in round numbers, a population of twenty-two millions.

The following calculations will show the means by which new property may be created in Ireland, through the improved industry and character of the people, to meet a just and liberal expenditure of Government, pay an equitable rent to the landed proprietors, and regular tithes to the clergy, and gradually remove all the petty squabbles that now disunite, perplex and irritate society.

The extent of Ireland is about twelve millions of Irish plantation acres. By comparing surveys taken of the whole, and of the different parts of the country, it appears that there are about three millions of acres of mountain and bog, (unprofitable except for fuel, and some small patches of mountain pasture,) and one million of woods, plantations, and pleasure grounds; the remaining eight millions are, or might be occupied as corn land, meadow or pasture.

An Irish plantation acre contains 7,840 square yards; a Scotch acre, 5,760 ditto; an English, 4,840 ditto. The following calculations are in Irish plantation acres.

IT is required to know in what manner the arable land of Ireland can be occupied, to give all classes the greatest number of advantages, with the fewest inconveniences?

As an approximation to the solution of this question, the following calculations are now offered for the consideration of the Irish public.

CALCULATION FIRST:— Showing the result from the industry of 1,000 people, employed partly in the cultivation and disposal of the produce of 1,000 acres, and partly in manufactures.

Suppose an association of 1,000 people, of the usual ages in society, to rent or purchase a farm of 1,000 Irish acres, of a medium quality of soil, to put it under spade cultivation, and to arrange it as under; the subjoined calculations will show the number of labourers necessary for the cultivation of the land, the probable produce, and the surplus that will remain,

remain, after the whole population are provided with food, clothes, instruction, and superior domestic accommodations :—

Robert Owen,
Esq.

(25 June.)

- 200 acres, green crop ; say 80 acres potatoes or carrots, and 120 acres white, yellow or Swedish turnip,
- 200 ditto, fallow crop ; viz. 150 acres flax, and 50 wheat.
- 200 ditto, clover, rape, vetches, &c.
- 200 ditto, white crop ; viz. 78 acres wheat, and 122 acres oats.
- 150 ditto, pasture ; a part to be laid down, and as much taken up occasionally.
- 30 ditto, orchard ; producing fruits, roots and culinary vegetables, cabbage for dairy cows, &c.
- 20 ditto, site of buildings, exercise ground, roads, &c.

1,000 acres.

The Labour and Produce are estimated as under :

	Number of Acres.	Number of Days Labour of 9 hours.	Number of Labourers.	Bushels per Acre.	Stones per Acre.	Stones produced.	Weight of Flour, Meal, &c. in Avoirdupois lbs.
Wheat - -	128	7,015	23	42	180	23,040	250,880
Oats - -	122	4,270	14	66	180	21,960	183,610
Potatoes - -	80	10,065	33	600	1,600	128,000	1,792,000
Orchard - -	30	4,270	14	{ Producing fruit, vegetables, roots, &c. }			212,166
Flax - -	150	11,285	37	-	45	6,750	94,500
Flax-seed - -	-	-	-	16	Total - { 2,400 bus ^s equal to - }		338 hhds.
Turnip - -	80	3,050	10	Would feed 100 cows or bullocks, pro- ducing 691,200 English pints of milk, or 26,800 lbs. of butter, or 74,438 lbs. of cheese, 17,920 lbs. of beef, and the hides of 20 bullocks, which would be slaugh- tered yearly.			
Vetches and } Clover - - }	120	915	3				
Feeding cattle } with the above } turnip vetches, } and managing } dairy - - }	-	4,270	14				
Turnip and rape	40	1,830	6				
Clover and } Vetches - }	80	610	2	Would feed 1,100 sheep, producing 110,000 lbs. of mutton, 7,700 lbs. of wool, and 1,100 skins yearly.			
Pasture - -	150	610	2				
Feeding and ma- naging sheep on the above turnip, rape, clover and pas- ture - - }	-	1,525	5				
Offals from dai- ry and kitchens }	-	610	2				
7,700 lbs. of wool	-	4,880	16	Producing 6,000 lbs. of bacon yearly. { Manufacturing it into 3,700 yards of broad cloth, worth 12 s. per yard. Manufacturing it into 137,400 yards of 4-4ths, ten hundred linen, at 1s. 2d. per yard. Tanning and dressing the hides and skins produced, and as many more in ad- dition as will produce 3,000 lbs. leather at 1 s. 4d. per lb. and 3,500 lbs. at 1s. per lb.			
94,500 lbs. of flax	-	28,365	93				
Tannery - -	-	915	3				
Site of buildings	20	-	-				
1,000 Acres - -		-	277	Labourers.			

N. B.—94,500 lbs. Scotch flax, dressed into 60,700 lbs. clean flax, and about 14,000 lbs. tow, which will produce 121,400 yards 4-4ths, from 10,100 to 12,100 linen, at 1 s. 3 d. per yard, and 16,000 yards of coarse linen at 9 d. per yard.

In this number of labourers are included those who would perform the offices of miller, baker, butcher, &c. &c.

To the two hundred and seventy-seven so occupied, must be added tradesmen and artificers, such as blacksmiths, carpenters, shoemakers, tailors, hatters, miners, road-makers, and others, say fifty-three more; making in all three hundred and thirty. But as the land will be improved by spade cultivation, the number of persons required to cultivate it would, for some years, annually diminish.

76 MINUTES OF EVIDENCE BEFORE SELECT COMMITTEE

Robert Owen,
Esq.

(25 June.)

Then allowing each person on an average, of men, women and children, to consume half a pound of flour, half a pound of oatmeal, three-quarters of a pound of fruit, three pounds of potatoes, &c. a quarter of a pound of beef, mutton, &c. and a pint and a half of milk, or what it would produce in butter or cheese, daily, one thousand people would consume yearly:—

		£.	s.	d.
Of flour - - - - -	182,500 lbs. at 1 s. 6 d. per stone	1,015	3	6 $\frac{1}{2}$
Oatmeal - - - - -	182,500 lbs. at 1 s. - ditto	676	15	8 $\frac{1}{2}$
Fruit - - - - -	273,750 lbs. at 1 s. - ditto	977	13	6 $\frac{1}{2}$
Potatoes - - - - -	1,095,000 lbs. at 1 d. - ditto	326	2	10
Beef and mutton - - -	91,250 lbs. at 2 d. per lb.	760	8	4
Milk - - - - -	547,500 pints, at 1 d. per pint	2,281	5	-
Broad cloth - - - - -	2,500 yards, at 12 s. per yard	1,500	-	-
Linen - - - - -	6,000 yards, at 1 s. 2 d. per yard	350	-	-
Leather - - - - -	{ 3,000 lbs. at 1 s. 4 d. per lb. } { 2,000 lbs. at 1 s. - ditto. }	300	-	-
Incidentals - - - - -	- - - - -	150	-	-
		£. 8,337	9	-

Food and clothes for each individual, averaging men, women and children, for a year	£.	s.	d.
- - - - -	8	6	9
Ditto, ditto, a week	-	3	2 $\frac{1}{2}$
Ditto, ditto, a day	-	-	5 $\frac{1}{2}$

By taking the above consumption from the produce, we have the following surplus:

	Flour. lbs.	Oatmeal. lbs.	Potatoes, &c. lbs.	Fruit. lbs.	Flax-seed. hhds.
Produce - - - - -	250,880	183,610	2,004,166	482,375	338
Consumption - - - - -	182,500	182,500	1,095,000	273,750	-
Surplus - - - - -	68,380	1,110	909,166	208,625	338

	Milk, &c. pints.	Beef, Mutton, &c. lbs.	Broad Cloth. yards.	Linen. yards.	Leather. lbs.
Produce - - - - -	691,200	133,920	3,700	137,400	6,500
Consumption - - - - -	547,500	91,250	2,500	6,000	5,000
Surplus - - - - -	143,700	42,670	1,200	131,400	1,500

N. B.—The flax-seed sown is estimated with other seeds, on the debit of this account, at the rate of four bushels per acre; there is, therefore, none deducted when taking the consumption from the produce.

	£.	s.	d.
Then 68,380 lbs. of flour, at 1 s. 6 d. per stone	366	6	4
1,110 lbs. of oatmeal, at 1 s. per ditto	3	19	3
909,166 lbs. of potatoes at 1 d. per ditto	270	11	8
208,625 lbs. of fruit, at 10 d. per ditto	620	18	1
388 hhds. of flax-seed, at 35 s. per hhd.	591	10	-
143,700 pints of milk, at 1 d. per pint	598	15	-
42,670 lbs. of beef, mutton or bacon, at 2 d. per lb.	355	11	8
1,200 yards of broad cloth, at 12 s. per yard	720	-	-
131,400 yards of linen, at 1 s. 2 d. per yard	7,665	-	-
1,500 lbs. of leather, at 1 s. per lb.	75	-	-
	11,267	12	-
Deduct incidentals - - - - -	150	-	-
Ditto, hides bought, say 40, at 45 s. - - - - -	90	-	-
	240	-	-
	£. 11,027	12	-

Thus,

341

Robert Owen,
Esq.

(25 June.)

Thus, from the labour of three hundred and thirty people, aided by machinery, one thousand acres would be kept in the highest state of cultivation, and the produce manufactured one thousand people fully supplied with food and clothes, and a surplus of agricultural and manufactured produce created, which, at the lowest state of the Dublin markets, could be sold for 11,027*l.* 12*s.* which the community would always be enabled to dispose of, as it would be a real surplus, after all the members of the community were amply provided for.

In a working population of a thousand persons, in the ordinary proportions of men, women and children, there are seven hundred and thirty-five competent to labour, after allowing the usual number for young, sick and aged; but supposing only two thirds (six hundred and sixty-six) out of one thousand, deducting, therefore, three hundred and thirty from six hundred and sixty-six, and allowing sixteen for those employed as superintendents and teachers*, three hundred and twenty to be employed in manufacturing whatever might be useful in demand, and best adapted to the localities of the situation; the value of the labour of persons so trained, instructed and employed, would soon be made to exceed 10*s.* per week, but estimating it at 6*s.* its yearly amount would be

To which add surplus of land produce	-	-	-	-	-	£. 4,992	-	-
						11,027	12	-
						£. 16,019	12	-

From this sum of 16,019*l.* 12*s.* there is to be deducted interest of capital, to be expended in forming the improved domestic arrangements, rent of land, if rented, or the interest of the purchase-money, if the land be purchased, tithes, national and local taxes, with the annual risk on stock and crop.

The expense of building a village to accommodate one thousand persons, including church, chapel, and places of worship for dissenters, schools, library, inn, &c. and furnishing the whole according to estimates accurately made, amounts to 35,000*l.*

£.		£.	s.	d.
35,000	at five per cent interest, and five per cent charged for wear and tear, is per annum	3,500	-	-
750	estimated value of implements necessary for one thousand acres under spade cultivation, which, at twenty per cent, is	150	-	-
2,500	estimated value of machinery for the woollen and linen manufactures, bleaching and tanning, at twenty per cent	500	-	-
1,000	value of one hundred cattle at 10 <i>l.</i> each			
1,100	ditto of eleven hundred sheep at 20 <i>s.</i> each, together 2,100 <i>l.</i> , which, at five per cent, is	105	-	-
250	manure; this would be produced by the community for their own use, except for the three first years, but say per annum	250	-	-
770	seeds of all kinds yearly	770	-	-
-	rent at 30 <i>s.</i> per acre, or interest of purchase-money	1,500	-	-
-	tithes at 6 <i>s.</i> 8 <i>d.</i> per acre on the whole	334	-	-
-	taxes and public burthens	334	-	-
4,575	estimated amount of labour in cultivating the land during the first year, whilst the buildings are erecting, five per cent	229	-	-
-	oak and larch bark, and ingredients for tanning and bleaching	300	-	-
-	incidentals, arising variously	200	-	-
45,945	debt.			
	Yearly charge	£. 8,172	-	-

The Account will then stand thus:—

Dr.	£.	s.	d.	Cr.	£.	s.	d.
To annual charges	-	-	8,172	By value of agricultural and manufactured surplus produce	-	-	11,027 12
Yearly profit	-	-	7,847 12	By value of manufacturers labour	-	-	4,992
							£. 16,019 12
			£. 16,019 12				

Thus a surplus yearly income of 7,847*l.* will be provided to pay off a debt of 45,945*l.* which the community would be enabled to redeem in less than eight years from the commencement of the establishment, allowing two years to put it in full activity.

Under spade cultivation, the produce will be greatly increased in quantity, and also in value, by raising plants yielding a greater quantity of human food. In a few years the produce will exceed one half more than has been stated; which, with the increased value of the crops, will be amply sufficient (including the value of the labour of those employed in manufactures,) to provide food and clothes, and all the necessaries of life, for upwards of four thousand people.

* In order to give the greatest advantages to such a population, it is necessary that manufactures should be established on the estate sufficient to employ the surplus hands.

Robert Owen,
Esq.

(25 June.)

CALCULATION SECOND:—Showing the result from the industry of 1,000 people, wholly employed in agriculture and manufacturing the produce.

Suppose an association of 1,000 people to rent or purchase as much land as would give full employment to the working part of the community in cultivating the soil and manufacturing and disposing of the produce.

In the foregoing calculation it has been shown, that in a working population of 1,000, there are at the very least 666 competent to labour; that 330 are sufficient to cultivate 1,000 acres, manufacture the produce, and perform the labour of the other domestic offices, cooking, baking, making wearing apparel, &c. for 1,000 people.

If from the 330, we deduct 45, the number of those employed in domestic offices, there remain 285 for the cultivation of 1,000 acres, and manufacturing the produce; and if 45 and 16, the number of those employed in domestic offices, and as superintendents and teachers, be deducted from 666, there remain 605 to be employed as cultivators, manufacturers, artisans and tradesmen; then if 285 can cultivate and manufacture the produce of 1,000 acres, 605 would be able to cultivate and manufacture the produce of 2,122 acres, supposing the land of the same quality, and arranged as before; viz.

	Acres.	Produce of Flour, Meal, &c.
Of Wheat - - - - -	278	544,880 lbs.
„ Oats - - - - -	255	383,775 d°
„ Potatoes - - - - -	174	3,897,600 d°
„ Orchard - - - - -	62	996,800 d° of fruit.
„ Flax - - - - -	320	438,470 d° of roots and vegetables.
		201,600 d° of Scotch flax.
		720 hhds. flax-seed.
„ Turnip - - - - -	170	Would feed 212 cows and bullocks, producing 950,400 pints of milk, or 36,960 lbs. butter, or 102,300 lbs. cheese, and 91,392 lbs. of beef, and the hides of 102 bullocks, which would be slaughtered yearly.
„ Vetches and Clover - - - - -	256	
„ Turnip - - - - -	85	Would feed 2,340 sheep, producing 234,000 lbs. of mutton, and 16,380 lbs. of wool yearly.
„ Vetches, rape, or clover - - - - -	170	
„ Pasture - - - - -	320	
„ Offals from dairy, &c. - - - - -	-	Producing 12,000 lbs. of bacon.
„ Site of buildings - - - - -	32	
Total - - - - -	2,122	Acres.

16,380 lbs. of wool might be manufactured into 7,900 yards broad cloth, worth 12s. per yard; 201,600 lbs. of Scotch flax might be manufactured into 259,000 yards of linen, at 1s. 3d. per yard, and 34,200 yards coarse ditto at 9d. per yard, or 293,200 yards at 1s. 2d. per yard.

Tannery would manufacture the hides and skins produced into 5,000 lbs. of leather, at 1s. 4d. per lb. and 7,500 lbs. light ditto, at 1s. per ditto.

The produce, consumption and surplus would stand as under:

	Flour. lbs.	Oatmeal: lbs.	Potatoes. lbs.	Fruit. lbs.	Flax-seed. hhds.
Produce - - - - -	544,880	383,775	4,336,000	996,800	720
Consumption - - - - -	182,500	182,500	1,095,000	273,750	-
Surplus - - - - -	362,380	201,275	3,241,000	723,050	720

	Milk, &c. pints.	Beef, Mutton, &c. lbs.	Broad Cloth. yds.	Linen. yds.	Leather. lbs.
Produce - - - - -	950,400	337,392	7,900	293,200	12,500
Consumption - - - - -	547,500	91,250	2,500	6,000	5,000
Surplus - - - - -	402,900	246,142	5,400	287,200	7,500

	£.	s.	d.
Then 362,380 lbs. of flour, at 1s. 6d. per stone - - - - -	1,941	6	5
201,275 lbs. of oatmeal, at 1s. per ditto - - - - -	718	16	9
3,241,000 lbs. of potatoes, at 1d. per ditto - - - - -	964	11	8
723,050 lbs. of fruit, at 10d. per ditto - - - - -	2,151	18	8
720 hhds. of flax-seed, at 35s. - - - - -	1,260	-	-
402,900 pints of milk, at 1d. - - - - -	1,678	15	-
246,142 lbs. of beef, mutton or bacon, at 2d. - - - - -	2,051	3	8
5,400 yards broad cloth, at 12s. - - - - -	3,240	-	-
287,200 ditto linen, at 1s. 2d. - - - - -	16,753	6	8
7,500 lbs. leather, at 1s. - - - - -	375	-	-
	£. 31,134	18	10

The

ON EMPLOYMENT OF THE POOR IN IRELAND. 79

The expense of building a village for the accommodation of 1,000 persons, including church, chapel, schools, &c. as before	£. 35,000
Additional farm offices	5,000
	<u>£. 40,000</u>

Robert Owen,
Esq.

(June 25).

£.	£.
40,000 at 10 per cent	4,000
1,700 estimated value of implements for 2,122 acres under spade husbandry, at 20 per cent	340
6,000 estimated value of machinery for woollen and linen manufactures, bleaching and tanning, &c. at 20 per cent	1,200
2,120 value of 212 cattle, at 10 <i>l.</i> each	223
2,340 ditto of 2,340 sheep, at 20 <i>s.</i> each, making 4,460 <i>l.</i> ; which at 5 per cent, is	
600 manure annually	600
1,600 seeds of all kinds, yearly	1,600
— rent, at 30 <i>s.</i> per acre, or interest of purchase-money	3,183
— tithes at 6 <i>s.</i> 8 <i>d.</i> per acre on the whole	708
— taxes and public burthens	708
— oak bark, and ingredients for tanning and bleaching, &c.	1,500
10,500 amount expended in labour in cultivating the land during the first year, while the buildings are erecting	525
— incidentals, arising variously	500
<u>64,860 debt.</u>	<u>Yearly charge - 15,087</u>

The Account will then stand thus:

Dr.	£.	s.	d.	Cr.	£.	s.	d.
To annual charges	15,087	-	-	By value of surplus produce	31,134	-	-
yearly profits	16,047	-	-				
	<u>£. 31,134</u>	-	-		<u>£. 31,134</u>	-	-

Thus, from the industry of one thousand people wholly employed in agriculture and manufacturing the produce, a surplus yearly income of 16,047*l.* will be provided to pay off a debt of 64,860*l.* which the community would be enabled to do in less than six years from the commencement of the establishment, allowing two years to put it in full activity.

	£.	s.	d.
Value of surplus produce	31,134	18	10
Ditto of produce consumed	8,187	9	-
	<u>£. 39,322</u>	7	10

Therefore it appears that one thousand people, so employed under these arrangements, would create sufficient produce in value to feed and clothe nearly five thousand people, without taking into account the increased productiveness of the soil, which in the course of a few years, under the system of management recommended, would at least exceed one half more than has been stated.

CALCULATION THIRD:—Showing the result from the industry of one thousand people employed principally in agriculture, their manufactures being limited to the supply of their own consumption.

IT has been shown by the foregoing calculations, that there are six hundred and sixty-six persons competent to labour in a working population of one thousand, and that two hundred and five are sufficient to cultivate one thousand Irish acres, manufacture the produce, to feed and clothe one thousand people, and dispose of the surplus.

If from two hundred and five be deducted forty-five, the number which would be employed in managing the dormitories, educating the children, making wearing apparel, cooking, baking, &c. &c. there remain one hundred and sixty for the cultivation of the one thousand acres; and if forty-five and sixteen, the number of those employed in domestic offices, and as superintendents and teachers, be deducted from six hundred and sixty-six, there remain six hundred and five to be employed in agriculture.

Then if one hundred and sixty can cultivate one thousand acres, six hundred and five would be able to cultivate three thousand eight hundred acres of the same description of land, and arranged as before; viz.

80 MINUTES OF EVIDENCE BEFORE SELECT COMMITTEE

Robert Owen,
Esq.

(25 June.)

	Acres.	Produce of Flour, Meal, &c.
Of Wheat - - - - -	850	1,666,000 lbs.
„ Oats - - - - -	720	1,083,600 lbs.
„ Potatoes - - - - -	260	5,818,200 lbs.
„ Orchard - - - - -	100	{ 1,607,740 lbs. of fruit. 730,700 d° of roots and vegetables.
„ Flax - - - - -	15	{ 9,450 lbs. of Scotch flax, which would manufacture into 13,740 yards, 4-4ths, 10-100 linens, and 32 hhds. of flax-seed.
„ Turnip - - - - -	335	{ Would feed 390 cows and bullocks, pro- ducing 1,555,200 pints of milk, or 60,480 lbs. of butter, or 167,400 lbs. of cheese, 188,160 lbs. of beef, and the hides of 210 bullocks, which would be slaughtered yearly.
„ Clover and Vetches - - - - -	455	
„ Pasture - - - - -	550	{ Would feed 4,150 sheep, producing 415,000 lbs. of mutton, and 29,000 lbs. of wool yearly.
„ Turnip - - - - -	165	
„ Vetches, rape or clover - - - - -	305	
„ Site of buildings, roads, &c. - - - - -	45	Offals from the whole would produce 18,000 lbs. bacon yearly.
<u>3,800 Acres.</u>		

The produce, consumption, and surplus will stand thus:—

	Flour. lbs.	Oatmeal. lbs.	Potatoes, &c. lbs.	Fruit. lbs.	Flax-seed. hhds.
Produce - - - - -	1,666,000	1,083,600	6,548,900	1,607,740	32
Consumption - - - - -	182,500	182,500	1,095,000	273,750	-
Surplus - - - - -	1,483,500	901,100	5,453,900	1,333,990	32

	Milk, &c. pints.	Beef & Mutton. lbs.	Wool. lbs.	Linen. yards.	—
Produce - - - - -	1,555,200	621,160	29,000	13,740	
Consumption - - - - -	547,500	91,250	5,200	6,000	
Surplus - - - - -	1,007,700	529,910	23,800	7,740	

N. B.—5,200 lbs. of wool would produce 2,500 yards of broad cloth for the use of the community.

	£.	s.	d.
Then 1,483,500 lbs. of flour, at 1 s. 6 d. per stone - - - - -	7,947	6	5
901,100 lbs. of oatmeal, at 1 s. per ditto - - - - -	3,218	4	3
5,453,900 lbs. of potatoes, at 1 d. per ditto - - - - -	1,623	3	8
1,333,990 lbs. of fruit, at 10 d. per ditto - - - - -	3,970	4	2
32 hhds. of flax-seed, at 35 s. - - - - -	56	-	-
1,007,700 pints of milk, at 1 d. - - - - -	4,198	15	-
529,910 lbs. of beef and mutton, &c. at 2 d. - - - - -	4,415	18	4
23,800 lbs. of wool, at 9 d. per lb. - - - - -	892	10	-
7,740 yards of linen, at 1 s. 2 d. per yard - - - - -	451	10	-
210 hides, at 40 s. - - - - -	420	-	-

£. 27,193 11 10

From this must be deducted, as much as will purchase those arti-
cles not provided by the community; viz.

Leather - - - - -	£. 300	-	-
Sundries - - - - -	150	-	-
	450	-	-

£. 26,743 11 10

The expense of building a village for the accommodation of 1,000 people, including
church, chapel, schools, &c. as before - - - - -

Additional farm offices - - - - -

£. 40,000

ON EMPLOYMENT OF THE POOR IN IRELAND. 81

Robert Owen,
Esq.

(25 June.)

£.		£.	s.	d.
40,000	at 10 per cent	4,000	-	-
3,000	estimated value of implements for 3,800 acres under spade husbandry, at 20 per cent	600	-	-
1,000	ditto - of machinery for linen and woollen manufactory, at 20 per cent	200	-	-
3,900	value of 390 cattle, at 10 <i>l.</i> each	402	10	-
4,150	ditto - of 4,150 sheep at 20 <i>s.</i> each, making 8,050 <i>l.</i> ; which, at 5 per cent, is			
800	manure, annually	800	-	-
2,500	seeds of all kinds, yearly	2,500	-	-
-	rent at 30 <i>s.</i> per acre, or interest of purchase-money	5,700	-	-
-	tithes, at 6 <i>s.</i> 8 <i>d.</i> per acre	1,266	6	8
-	taxes and public burthens	1,266	6	8
-	ingredients for bleaching, &c.	100	-	-
17,000	amount expended in labour in cultivating the land during the first year, while the buildings are erecting	850	-	-
-	incidentals, arising variously	400	-	-
<u>£. 72,350</u>		<u>£. 18,085</u>	<u>3</u>	<u>4</u>

Dr.	£.	Cr.	£.
To annual charge	18,085	By value of surplus produce	26,743
Yearly profit	8,658		
	<u>£. 26,743</u>		<u>£. 26,743</u>

Thus, from the industry of 1,000 people, employed principally in agriculture, and in manufactures only to the extent of their own consumption, a surplus yearly income of 8,658*l.* will be provided to pay off a debt of 72,350*l.*; which the community would be enabled to do in about nine years, allowing, as before, two years to put the establishment in active operation.

Value of surplus produce	£. 26,743
Ditto of produce consumed	8,187
	<u>£. 34,930</u>

By comparing that part of the produce consumed by the community with the whole produce, it appears that 1,000 people, so employed in agriculture, would create sufficient produce, both in quantity and value, to feed and clothe upwards of 4,000 people, without taking into account the increased productiveness of the soil, which, under the proposed system of spade husbandry, would at least exceed one half more than has been stated.

CALCULATION FOURTH :—Showing the result from the labour of 1,000 people employed principally in manufactures, and cultivating only such a quantity of land as may yield sufficient agricultural produce for their own consumption:

IF the localities of any situation should render it more advantageous to employ the greater part of the population in manufactures, the following statement will show the quantity of land and labour necessary to provide food and clothes for 1,000 people, and the value of the surplus labour employed in manufacturing whatever might be most likely to meet a demand in the markets of the country.

It has been shown, by the foregoing calculations, that 1,000 people would consume yearly 182,500*lbs.* of flour, 182,500*lbs.* of oatmeal, 1,095,000*lbs.* of potatoes, 273,750*lbs.* of fruit, 547,500 pints of milk, 91,250*lbs.* of beef, mutton, &c.; 2,500 yards of cloth, 6,000 yards of linen, and 50,000*lbs.* of leather: To produce which will require,

Wheat	-	-	-	-	94 acres, and 17 labourers.
Oats	-	-	-	-	121 ditto, and 14 ditto.
Potatoes	-	-	-	-	48 ditto, and 19 ditto.
Orchard	-	-	-	-	15 ditto, and 7 ditto.
Flax	-	-	-	-	9 ditto, and 3 ditto.
Turnip, vetches and clover	-	-	-	-	155 ditto, and 20 ditto.
Turnip, rape and pasture	-	-	-	-	135 ditto, and 8 ditto.
Buildings, &c.	-	-	-	-	20 ditto.

Total acres - - 597

Manufacture of wool into cloth	-	-	-	-	8 ditto.
Ditto - of linen	-	-	-	-	9 ditto.
Tradesmen and artisans	-	-	-	-	30 ditto.

Total labourers - - 135

By the above it appears, that 597 acres and 135 labourers are necessary to provide food and clothes, and other necessities, for 1,000 people; allowance being made, in land and labour,

82 MINUTES OF EVIDENCE BEFORE SELECT COMMITTEE

Robert Owen,
Esq.

(25 June.)

labour, to create a surplus sufficient to purchase such necessary articles as cannot be advantageously produced by the community.

If from 666 be deducted 135, and 10, the number of teachers and superintendents, there remain 521 to be employed in manufacturing whatever might be useful, in demand, or best adapted to the localities of the situation. The value of the labour of these 521 individuals, at 6s. a week, is yearly 8,127*l.* 12*s.*

The expense of building a village for the accommodation of 1,000 people, including church, chapel, schools, &c. on a farm of 600 acres, is estimated at 30,000*l.*

£.	£.
30,000 at 5 per cent interest, and 5 per cent for wear and tear	3,000
460 value of implements, at 20 per cent, is	92
500 value of machinery, which, at 20 per cent, is	100
1,300 value of cattle and sheep stock, which, at 5 per cent, is	65
150 manure	150
400 seeds of all kind	400
— rent at 30 <i>s.</i> per acre, or interest of purchase-money	896
— tithes at 6 <i>s.</i> 8 <i>d.</i> per acre, on 597 acres, is	199
— taxes and public burthens	199
2,700 estimated amount paid for labour during the first year	135
— incidentals, arising variously	300
£. 35,510 Debt.	Yearly charge - £. 5,536

The Account, in this case, will stand thus :

Dr.	£.	Cr.	£.
To annual charges	5,536	By value of manufacturers labours	8,127
Yearly profit	2,591		
	£. 8,127		£. 8,127

In the foregoing calculations, 42 bushels of wheat, and 66 bushels of oats, are stated as the produce of an Irish acre under spade cultivation, which is equal to 25 bushels of wheat and 40 bushels of oats, per English acre; but as the average quality of land in Ireland is equal to the best soils of England, it would not be more than 20 bushels of wheat and 32 bushels of oats, per English acre, of a medium degree of fertility.

From land of an average quality, under spade husbandry, in the county of Durham, 65 bushels of wheat, per English acre, have been produced for several years in succession, which is equal to 105 bushels per Irish acre. There cannot, therefore, be a doubt, that when the land shall have been for a few years under the improved system of spade husbandry, and when the members of the community shall be taught to unite their industry, and adopt a regular system of mutual interest and co-operation in producing, manufacturing and consuming, the result would at least be doubled.

To these advantages must be added the minerals and fisheries of Ireland, which, under the new system of union and co-operation, will soon be made most productive.

It is therefore evident that this hitherto ill-fated island is competent to maintain, not only all its own inhabitants, but more than double the whole population of Great Britain and Ireland, in comfort heretofore unattained by any nation or people at any period of the world.

A Summary of the Advantages to be derived from the execution of such a Plan, may be presented under the following heads :

1. Expensive as such a system for the unemployed poor may appear to a superficial observer, it will be found on mature investigation, by those who understand all the consequences of such a combination, to be by far the most economical that has yet been devised.

2. Many of the unemployed poor are now in a state of gross ignorance, and have been trained in bad habits; evils which, under the present system, are likely to continue for endless generations.

The arrangements proposed offer the most certain means, in a manner gratifying to all the parties interested and to every liberal mind, of overcoming both their ignorance and their bad habits in one generation.

3. The greatest evils in society arise from mankind being trained in principles of disunion. The proposed measures offer to unite men in the pursuit of common objects for their mutual benefit, by presenting an easy practicable plan for gradually withdrawing the causes of difference

(25 June.)

difference among individuals, and of making their interest and duty very generally the same.

4. This system will also afford the most simple and effectual means of giving the best habits and sentiments to all the children of the unemployed poor, accordingly as society shall be able to determine what habits and sentiments, or what character, ought to be given to them.

5. It will likewise offer the most powerful means of improving the habits and general conduct of the present unemployed adult poor, who have been grossly neglected by society from their infancy.

6. Owing to the peculiar arrangement of the plan, it will give to the poor, in return for their labour, more valuable, substantial and permanent comfort, than they have ever yet been able to obtain.

7. In one generation it will supersede the necessity for poor rates, or any pecuniary gifts of charity, by preventing any one from being poor or subject to such unnecessary degradation.

8. It will offer the means of gradually increasing the population of such unpopulous districts of Europe and America as may be deemed necessary, and of enabling a much greater population to subsist in comfort on a given spot, if requisite, than existed before; in short, of increasing the strength and political power of the country in which it shall be adopted, more than tenfold.

9. It is so easy that it may be put into practice with less ability and exertion than are necessary to establish a new manufacture in a new situation; many individuals, of ordinary talents, have formed establishments which possess combinations much more complex. In fact, there would not be any thing required which is not daily performed in common society, and which, under the proposed arrangement, might not be much more easily accomplished.

10. It will effectually relieve the manufacturing and labouring poor from their present deep distress, without violently or prematurely interfering with the existing institutions of society.

11. It will permit mechanical inventions and improvements to be carried to any extent; for by the proposed arrangement, every improvement in mechanism would be rendered subservient to, and in aid of, human labour.

12. And lastly, every part of society would be essentially benefitted by this change in the condition of the poor.

Some plan founded on such principles as have been developed herein, appears absolutely necessary to secure the well-being of society, as well as to prevent the afflicting spectacle of thousands pining in want; and amidst a superabundance of means to well train, educate, employ, and support in comfort, a population of at least four times the present number.

To what extent do you propose, in your views respecting Ireland, to give employment and education to the population of that country?—To all who are in want of employment, and who are uneducated.

Have you formed any calculation as to the number to whom this system should be made applicable?—It is not very easy to ascertain very exactly or very nearly, the number of the population of Ireland, who are unemployed, or inefficiently employed.

Upon what principles would you suggest the providing employment for the unoccupied population of Ireland?—In a moral point of view, it is better that men should be usefully employed than that they should be idle; secondly, all wealth is gained by the industry of the working classes; and a state loses in proportion to the number of those who are idle, while it gains in proportion to the extent of its population, which are beneficially employed; and lastly, what a man produces beyond his own consumption, is a real gain to the public, and will be in the exact proportion in which the produce he creates exceeds his own consumption. Upon these principles I recommend that measures should be immediately adopted, to provide a useful education and productive employment for all the children of the lower classes.

Do you think it is practicable to do so for all the children of the lower class in Ireland?—I am convinced, from a long study upon this subject, and the experience I have acquired in regard to the means of improving the condition of the working classes, that the attainment of this object is not only desirable but easily practicable.

By what means do you propose the accomplishment of those objects?—By the loan of funds requisite for such purpose, obtained through the credit of government; proposing at the same time, that the parties requiring them should pay the interest, and provide a sinking fund to discharge the debt in sixteen years: the debt and interest to be secured on the land and buildings of the parties having the loan.

Do you think such an application of the credit of government and of the funds of the country is advisable and requisite for the providing education and productive

Robert Owen,
Esq.

(25 June.)

employment for the people of Ireland?—I do; for as it appears to me, the peculiar circumstances under which Ireland now suffers call for such aid, and the new and improved industry which would thus be brought into action, would increase to a great extent the capital of the country.

What security do you conceive could be offered to government for the repayment of such advances?—The land and the buildings erected according to the arrangements detailed in the plan which has been submitted to the Committee.

Do you conceive that such investment of capital is likely to be profitable to the parties engaged in it?—Most profitable.

Then do you not think, in the present state of capital in this country, that if it were so profitable as you seem to represent, that capital would naturally find its way into Ireland for such purposes?—I do not think so.

What are the reasons that incline you to doubt that such would be the fact?—The present disturbed state of that country, and the general arrangements which now exist throughout Ireland; I mean in the southern counties particularly.

To what arrangements in the southern counties do you allude in your last answer?—To the state in which the population is generally; they are untaught, they have no system; they have no means around them of coming into competition with the improved state of manufactures and agriculture in England.

As far as your observations have extended, is there a very considerable part of the population in Ireland, or that part of Ireland which you visited, without adequate employment?—A very large proportion.

Can you at all estimate what proportion, as compared with the entire mass of the population?—I do not think that more than a very small proportion of it is productively or beneficially employed; I think not half are employed; not one half in the south of Ireland are employed.

In case tranquillity were restored in the south of Ireland, do you conceive that capital might find its way into that country, if they carry into effect the scheme which you have suggested, as being likely to be a profitable one?—It is very probable, provided the country was in a state of tranquillity; as far as I could judge by what I saw, it is not likely that Ireland can ever be in tranquillity, until occupation can be first of all procured for the peasantry; that is the first and most necessary step.

Then do you consider the want of occupation to be amongst the principal causes, or the principal cause of the disturbances in the south of Ireland?—I believe that to be the principal, if not the sole cause.

What are the facts upon which you found that opinion?—Whenever the working class are occupied in such a manner as to produce them tolerable comforts, I have never seen them discontented.

Is that a general observation, or applicable to different parts of Ireland?—A general observation.

Is it a general observation as applicable to Ireland, or is it an abstract principle?—I think it is a principle particularly applicable to Ireland; but I also think it is a general principle applicable to all countries.

What parts of Ireland have you seen in which a profitable employment of the population have produced such effects?—In the north of Ireland.

State to the Committee your view of the condition of the peasantry in the north of Ireland, as compared with those of the south?—I found that they occupied more comfortable dwellings, that they were kept in better condition, and every thing indicated a much greater degree of general comfort than I perceived in the south; and I observed that there was a very improved cultivation, even in the manufacturing districts, as compared with many parts of the south.

Were you able to ascertain, during your visit to Ireland, whether the inactivity of the peasantry proceeded from any want of disposition on their part, or from any want of facility in procuring occupation?—It appeared to me entirely to arise from the want of productive employment, and from the very ignorant state in which they were brought up.

Did you observe the state of agriculture in that country?—I did.

In the south of Ireland?—Yes.

Is the state of agriculture in Ireland in an improved state, or in a rude state?—It is in a very rude state; but I have with me a person who accompanied me through those different districts, and he will be most happy to give his evidence before this Committee; he is a gentleman who is intimately acquainted with the state of agriculture in the Lothians of Scotland and the northern part of England, and is minutely acquainted with the state of agriculture in Ireland.

Do

349

Robert Owen,
Esq.

(25 June.)

Do you think that the introduction of an improved system of agriculture into the south of Ireland (by the south of Ireland meaning south of Dublin), would be the means of increasing the productive employment for the peasantry?—If that which may be termed an improved system of agriculture were to be introduced, it would give employment to many more than now have it.

What are the obstacles which you think stand in the way to the introduction of such an improved system of agriculture?—The want of a profit.

In your opinion are there any other causes?—A want of capital, and a want of knowledge.

Under any plan which you are enabled to suggest, how would you propose to increase the profits of the parties who might engage in agricultural industry?—By placing them under circumstances so much more favourable than those in which they exist at present, for the production of agricultural produce, and for their domestic consumption, that they would be able to bring to market not only a greater proportion of the produce, but at a less price than they can now do.

Do you mean, by more favourable circumstances, that they would be able to produce it at less cost than they can now?—Far less cost.

Do you mean to suggest, that under the circumstances to which you allude, that an increased consumption would take place?—A considerably increased consumption would naturally take place.

Is it then from the combination of these two circumstances, namely, the diminished cost of the article produced, and the increased consumption, that you consider the increase of profits to follow?—I chiefly look to the general amelioration of Ireland from the parties producing the products of the soil and the manufactures cheaper and better than they are doing at present, so as to enable them to come fairly into competition with all the markets in Europe, and also by a considerably increased consumption on the part of those people themselves, in consequence of their being able to consume more on account of their industry being more profitable.

What are the circumstances which, in your opinion, would lead to a diminished cost on the part of the Irish farmer, so as to enable him to bring his agricultural produce to market at a cheaper rate?—A complete change of his present circumstances; the want of capital, and the state in which he is generally, renders his industry of very little value to him, and what he does he does most inefficiently, and at a very great cost.

Supposing that you were in possession of sufficient capital, either administered by government or otherwise, to carry your schemes for the amelioration of the population of Ireland into effect, in what way would you proceed to do so; applying the observation to one establishment only?—I would unite a certain number of individuals, perhaps from eight hundred to twelve hundred, in what may be considered as a village of improved construction, which should be placed as near as local circumstances would permit, to the centre of their operations, to avoid the loss of unnecessary labour, by going or returning too far. This village should be surrounded by a larger or smaller quantity of land, according to the localities of the situation, as it might be thought more or less desirable to have a surplus in agricultural produce or in manufactured productions.

Supposing that you comprehended within the sphere of your operations, a thousand or five thousand acres of land, would you take the inhabitants of the proposed village from the immediate district, or from other parts of the country?—From the district where they now are.

Do you conceive, from the observations made during your visit in Ireland, that the ordinary population in the district you would select, would be more or less than the number of the persons you would wish to introduce into the village?—Generally below what would be required. In any of the agricultural districts I have been in in Ireland, the population would be much beneath that which would be required to carry the proposed arrangements into general adoption.

Having built the village, what is the next step you would take in order to employ the inhabitants of the new village with advantage to themselves, and so as to afford the means for the repayment of the cost of the various erections, and of the land?—At some convenient distance from the village, I would erect a manufactory or manufactories, according to the localities of the situation.

What are the manufactures which you would consider it would be practicable to introduce?—Wool, flax, and leather, in consequence of their being the materials raised in the country; the native materials.

Robert Owen,
Esq.

(25 June.)

Do you contemplate the sale of the articles, or the consumption of them, by the inhabitants of the new village?—The statement which I have put in, will show that those individuals can in the first place, under this arrangement, create abundantly for themselves, and have a surplus in quantity, without having regard to price, sufficient to maintain two thousand more; of course there would be under such circumstances, a very considerable surplus to be disposed of.

Is it from that surplus that you propose to create a sinking fund for the repayment of the principal, and a sum sufficient to guarantee the interest of the capital advanced?—Yes.

Have you calculated the expenses which might be incurred in such an experiment?—The Committee will find that all the expenses are calculated in the statement I have had the honour to put in.

Where do you conceive that a market would be found for the increased produce that would result from such proposed arrangement?—Under this arrangement Ireland would afford a very increased market, England would afford a very extensive market, and when those were supplied, then Europe and America would create a sufficient demand for all their industry.

Suppose your scheme could be acted upon in Ireland, would not there be, with regard to all those villages, a surplus throughout?—A very large surplus over the consumption of Ireland; that surplus would be a clear gain, as long as gain could be of any use.

Do you conceive that any other manufactures besides those which you have suggested, are likely to be introduced in those villages?—There is no reason why the cotton trade should not be introduced into Ireland with the same advantages as in England, provided the country was in a state of tranquillity, and the parties understood the nature of the employment as well as the master manufacturers in England.

Do you propose that the industry of the inhabitants of those villages should be employed for the advantage of the inhabitants themselves, or to form a common stock for the benefit of the entire village?—For both; the villages would be carried on upon the principle of a partnership, and the proportion of the profit belonging to each individual would be carried to his account at the end of each year; if any of the parties were dissatisfied he would be at liberty to leave the establishment, or at any period when he found he could do better for himself than in his present circumstances.

Do you not conceive that your scheme would have a tendency to deprive an individual who possessed superior skill, character and industry, of that reward, which under the present frame of society is connected with those advantages?—My own conviction is, that the individuals under the present arrangement, would be much better rewarded than the most successful individual among the working classes in the present state of society.

But still there would be no increased advantages afforded to the man of superior skill, industry and character, beyond that which would be received by a man of inferior skill and of inferior industry?—They would all have advantages much greater than they can possess at present, and there would be the same variety in the characters of the individuals in the establishment as there is in this assembly, or in the House of Commons, or any other situation; and those who possessed the superior talents, would have a more complete enjoyment of them.

But they would not by reason of having a superiority, either in character or in industry, or both, acquire any additional command over the comforts of life?—Not for themselves individually, but still they would have a greater individual reward than under the present general arrangements of society.

To what do you allude by a greater individual reward?—The increased and extraordinary benefits which the whole of this population would possess.

The object of the examination is solely with regard to the new establishments; suppose an establishment, for instance, of a thousand persons, in which the profits might be taken at 1,000 *l.* would not that, under your scheme, be equally divisible among all the inhabitants?—Yes.

Then do you not deprive superior skill, character or industry, of that reward which, under the ordinary operations of society, connects itself with those qualities?—Quite the reverse; as it appears to me, quite the reverse. The arrangements which are made for those who are united together, will afford each individually, far greater

Robert Owen,
Esq.

(25 June.)

greater advantages than the most successful individual in a similar station of life can obtain in the existing state of society.

Under the present state of society, do you not conceive that a person of superior skill, industry and character, has a greater chance of success than a person of inferior skill, industry and character?—Under the present arrangements of society, certainly that is the case.

Under the new arrangements to which you allude, does it not follow, that a person of superior skill, industry and character, would obtain only an equal reward with a person of inferior skill, industry and character?—But his inducement would be, that he would be in the actual possession of numerous advantages, which the present state of society, as now arranged, cannot afford him.

The Committee will thank you to confine your answer to the state of two individuals in your proposed village; according to your scheme, would a person of superior skill, industry and character, have any greater reward than the person of an inferior description?—He would not have a greater reward, nor would he wish to have any greater reward.

On what do you found the last opinion which you have suggested?—From the training and education of those individuals, they would discover that this new arrangement, bringing all of them upon an equality, would enable each to possess infinitely more substantial and permanent advantages than the most favoured and most successful individual could obtain under the existing state of society; for I imagine that that is the comparison which would be made by those individuals.

Do you think that an entire change in the moral character of the individuals, and an entire cessation of the ordinary motives which actuate human beings in society, would take place in the village to which you allude?—Pardon me, I conceive exactly the same kind of motive would influence individuals in both cases; but in the latter case their judgments would be much better informed, and their understandings more enlarged, and they would, upon a comparison with the situation of those of the same class in the present state of society, discover that they were much better off; and if, upon such comparison, they came to a different conclusion, upon giving a day's notice they would be at liberty to withdraw.

Do you not think that the success which an individual obtains in consequence of character and industry, operates as a strong excitement to improvement in industry and moral character?—Under the present arrangement of society, I think so.

Why would not the same reason operate under the new?—The circumstances would be altogether different: the individual would have quite a different education; he would be placed under new moral circumstances.

Then it is simply to the education and the improved moral habits of the people that you would trust for the developement of the industry and character of the individuals of the new village?—Certainly, and also the improved circumstances under which the individual would be placed.

State what those improved circumstances would be?—Arrangements purposely devised throughout with a view to exclude from among them all those deteriorating and unfavourable circumstances which now surround the working classes in every part of the British empire, and so devised as to combine only those circumstances which long experience has proved to be favourable to the good conduct and happiness of society.

Do you think it is possible to exclude all those circumstances which are calculated to lower the character, and to secure only those which are calculated to raise it?—It is a very important question, and much depends upon it; I have no hesitation in saying, that I think it to be quite easy to form arrangements by which all these unfavourable circumstances may be excluded with which the working classes are now surrounded.

Is what you state in your last answer founded upon experience, or does it rest upon reasoning only?—Upon an experience of nearly forty years.

Has any experiment calculated to prove the truth of that opinion been tried within your knowledge?—Yes.

State what that experiment has been?—I tried the experiment partially in Lancashire for nine years, upon a population of about five hundred men, women and children.

What was the state of that population when you tried the experiment?—It was a degraded manufacturing population, in the immediate neighbourhood of Manchester.

Robert Owen,
Esq.

(25 June.)

Under what circumstances did you try the experiment; what course did you take?—Those individuals were employed in a cotton manufactory, and such rules and regulations were introduced as excluded them from as many of the unfavourable circumstances as it was practicable to exclude, in the condition in which they were; the consequence was, that those individuals were conspicuously superior and better and happier than the same number could be found, of the same class of society, in any other situation.

What were the circumstances of an unfavourable description that you endeavoured to exclude?—Drunkenness and idleness, which were then the common habits of that district.

How did you endeavour to exclude those two unfavourable circumstances?—By a kind and gentle treatment; by explaining to them the inconveniences and disadvantages which they suffered from such a course of conduct; and by making regulations, that those individuals who lost any part of the week by drinking in public houses, should be excluded from further employment.

Was that manufacture, as carried on under your own directions, conducted upon the principle which you have suggested of partnership, and of an equal participation in the profits?—No; not among the working classes.

Then that establishment was conducted upon the ordinary principles of giving to every individual that amount, which, from his superior capacity, integrity or industry, he was able to earn, or entitled to receive?—Yes. I was going on to state, that this which I have mentioned, was the commencement of an experiment which I have subsequently carried to a much greater extent.

Have the goodness to state to the Committee, what was the subsequent progress of that experiment in any other place?—Finding the result to be so beneficial, I was very desirous to obtain the means of trying the experiment upon an enlarged scale, and for that purpose, in conjunction with other gentlemen, I purchased the establishment at New Lanark, in Scotland, and at that period there was a population there of fourteen hundred persons, men women and children.

Of what description of persons was that population composed, and what was their moral condition?—A collection of the very dregs of the lowlands of Scotland, and a more demoralized population I never have seen.

In what year was it that you commenced this undertaking?—In the year 1799.

What course did you pursue with regard to the establishment at New Lanark?—Generally speaking, a system of kindness was introduced almost immediately; but practically, arrangements were formed to withdraw as many of the great unfavourable circumstances as was practicable.

What were those great unfavourable circumstances which you endeavoured to withdraw?—The circumstance which appeared to me to be the most disadvantageous to this population was, the existence of public houses, of which there were many in the village; those were withdrawn. The next thing which appeared to me to be of importance, were the small petty retail shops, which, in consequence of New Lanark being an out-of-the-way place, were productive of greater disadvantages to the individuals than usually happens in other places; though in all cases I think they are productive of great injury to the working classes.

Did you substitute any thing for those public houses and retail shops?—The public houses and retail shops were superseded by a general store, forming a depôt of a sufficient quantity of the necessaries and comforts of life; the stores were purchased with money, and were of the best quality that could be procured; these articles were sold to the population, not at a loss, but at a price sufficient to cover the first cost and charges; and yet the immediate result was to enable the parties to sell to those people all kinds of articles which they required, of the best quality, at a price five-and-twenty per cent lower than they used to pay for the inferior articles.

Do you not conceive that the improved wealth of the manufacturer himself would lead eventually to a better system of buying and selling, without any artificial interference with the natural supply?—I think not.

Was not the effect of such interference at once to deprive all those individuals of the means of subsistence, who, till then had been the proprietors of retail shops, and supplied those articles?—Most certainly; probably a dozen individuals were deprived of occupations, which were extremely injurious to them, inasmuch as they yielded to them, ultimately, no increase of capital; and by making the change we created

created a most beneficial result for fifteen hundred persons, and which eventually have amounted to twenty-five hundred.

Were there any other circumstances besides those, namely, the public houses and retail shops, which you were induced to exclude from the population of New Lanark?—Those are the principal circumstances which were excluded, but there were many other circumstances introduced.

Be kind enough to state what those circumstances were?—An improved system of education, and means to enable them to keep themselves and their houses, and their neighbourhoods much cleaner; and means by which their children could be in all respects much better trained than they could have been before.

Were schools introduced originally into the establishment as forming part of the establishment?—Yes; but those schools were extremely defective, and not at all calculated to produce the result that I required.

Were means taken to give to the inhabitants of New Lanark the benefit of the improvements which have taken place in the means of preparing food, and of ventilating, lighting, and heating their apartments in general?—There were considerable improvements introduced into the village; but the improvements in question, such, for instance, as regard cooking, are only now in progress.

Are there any circumstances which distinguish New Lanark from other well-regulated manufactories, except the exclusion of public houses and retail shops, and the introduction of education, and a general attention to the habits of the manufacturers?—Among the unfavourable circumstances, I forgot to mention that we excluded law from the establishment: I should have mentioned that the common practice was, when the place was purchased by myself and partners, that one day in the week was occupied by the magistrates of Old Lanark in hearing causes, arising out of disputes which took place among those people: by the change that has been introduced, I believe not three cases of dispute have occurred within the last seven years.

How are the manufacturers at New Lanark paid?—They are paid partly by day-wages, and partly by the amount of the work which they perform.

Does a superior workman, a man of skill and ability at New Lanark, earn more than a workman of an inferior description?—Yes; and if the Committee will permit me, I will add that I think that one of the greatest disadvantages which exists in the establishment.

For what reason do you conceive that to be a disadvantage?—It is productive of inequality in a variety of ways, which in its consequences produces almost endless evils among the population; and if the establishment were entirely my own, I would put it upon a system under which they should not receive that inequality of wages; I should do it immediately.

Have you ever known any establishment, or have you ever heard of any establishment carried on, in which superior skill and industry did not receive increased reward?—Yes, I have heard of several; there are many now existing in America.

But you have not yourself seen any?—I have not seen any, except the Moravians, in this country; and there is in their establishments a mixed property, partly private and partly public; they have many of the advantages of association, and some arrangements by which individuals do partake of more advantages than others in ordinary cases.

But in the experiment which you have tried in Lancashire and Scotland, the system of equality of profits has not yet been introduced in the payment of the manufacturers?—It has not been yet introduced.

Why has it not been introduced at New Lanark?—In consequence of the arrangement at the time not being so favourable to the introduction of the system as that now proposed to be introduced.

If such a system were of more advantage than the ordinary principles by which human industry is carried on, why would it not be introduced generally?—I conceive, that as soon as there should be one fair experiment on the subject, the system would be generally introduced in the same way, as an improved steam-engine gets introduced to public notice: it is not yet known.

In the proposed scheme which you have suggested, how would you apportion the profits with regard to women and children?—I conceive there would be no difficulty in apportioning the profits to those individuals.

Would you give them the same share of profit as you would to the men?—The different families would have their proportions of the profits, the women and the children

Robert Owen,
Esq.

(25 June.)

children would enjoy all the advantages that persons in their situation could expect to receive, and if they left the establishment, the profits would be divided among the families.

And do you see no inconvenience from thus depriving industry, skill and character of its ordinary reward?—Quite the reverse; and I conceive that under this arrangement, the most inferior individuals would be very far superior to any of the same class in life that could be found in common society.

But do you suppose there would be a perfect equality among individuals, with regard to their moral and cultivated abilities?—They would have qualifications quite sufficient for the duties they would have to discharge.

Do you not think that some individuals would be found to be more idle and less skilful than others?—I do not think that there would be a disinclination in any to perform that labour which they ought to perform.

But supposing that a person was more willing to labour than another, according to your plan, would that person receive any more than one who was less disposed to labour?—That individual who excelled the most in the establishment, would at all times have an opportunity of making a comparison of his present situation with that of those around him, and of seeing whether he was upon an equality, or otherwise, with those individuals (I mean individuals in common society); if he found that his situation was inferior, he would quit the establishment; and if, on the contrary, he found that he obtained greater advantages, of course he would remain there.

Have you carried the instruction of the young at New Lanark to any considerable extent?—Yes.

Has crime diminished at New Lanark, since your acquaintance with that place?—In a very extraordinary manner.

Can you state any facts in corroboration of that which you now state?—For the last seven years there have been, upon an average, two thousand two hundred men, women and children residing in the village, and, in addition, from two to three hundred persons, who come from Old Lanark daily to work in the village, making a mixed population of two thousand five hundred; and having the immediate direction of those individuals, I can take upon myself to say, that I never had occasion to imprison any one of them for an hour, during the course of twenty-four years, or to inflict one legal punishment.

Having stated that you considered the population of Ireland not to be excessive, for the purpose of trying the enlarged experiment, similar to that which you have suggested, the Committee would be glad to know what are the facts which have led you to such an opinion?—In passing through the country, and seeing the state in which the population then was, I concluded that an advance upon the part of government, of from five to eight millions, would be abundantly sufficient to give employment immediately to all those who were unoccupied in Ireland, and that by such occupation the remaining part of Ireland would derive considerable benefit by the demand which would be afforded for all the materials required for those new operations, and by the increased demand that there would be for labour.

Do you conceive that it would be possible to give profitable employment to the whole of the unoccupied poor of Ireland, and if the number were double, that it would still be practicable to find employment for them?—I do.

Do you think an alteration of the system, as you recommend, of placing the population of Ireland in an improved state, would not have a tendency to increase the population of the country very considerably?—From all the inquiries which I have been enabled to make, it does not appear to me that those who are in the most comfortable circumstances of life increase the most rapidly; I believe it will be found that the inhabitants of those places where the greatest misery exists, increase the most rapidly; therefore, I think they would not increase more rapidly under the new arrangements, than they would under the present state of society.

On what grounds do you conceive that the population of Ireland might be doubled without inconvenience to the country, and in what time do you think that might take place?—I have stated that productive employment for a double population might be found; it does not signify, as it appears to me, in what time the population doubles or trebles itself, so long as a population can produce more than it consumes, it must be a gain to the empire, and it might go on to a much greater extent with advantage.

In your proposed plan have you any means for obliging idle people to work, and to contribute their proportion to the prosperity of the establishment?—In the commencement

355
Robert Owen,
Esq.

(25 June.)

mencement of the experiment, when the persons were in the most demoralized state, it would become necessary to have pecuniary fines, by way of punishment, for infringing any of the rules or regulations of the place; those fines, for the first three or four, or five years, would amount to a comparatively large sum, but for the last twelve years I do not suppose that, upon an average, they would amount to 40 s. a year.

Do you mean to state that that applies to the population of New Lanark — Yes.

As this system which you have adopted at New Lanark leads very much to improve the morals and habits of the people who are employed there, should you not expect that in time it must proceed so far as to leave men without fault?— I think the morals of the individuals composing the population have been improved in a most extraordinary manner; it is my conviction, from a long study of the subject, that the greater part of the faults of mankind arise from the very unfavourable circumstances in which they are allowed to exist; for instance, the peasantry in Ireland are surrounded by so many unfavourable circumstances, that they can scarcely avoid, I would rather say, they cannot avoid being what we find them; if they were placed under circumstances of a more favourable and of a more moral tendency, I think they would derive the benefit of those advantages; and by legislating upon that principle, by withdrawing all the unfavourable circumstances and combining the most favourable, we should improve their condition beyond calculation.

Allowing it to be true, that a population in a state of poverty has as many children born to them as takes place in a population in easy circumstances, is there the same chance that the one would attain to the state of manhood as the other?—I have not facts before me to give a decided answer.

Do you not think that poverty has a tendency to thin mankind?—I believe the fact to be, that the number of children in the families of working classes is equal to the number in the higher classes.

In your opinion, do they bring up the same number to manhood as are brought up in the higher classes?—If the poorer classes have not a sufficient quantity of food, I conclude that they would not.

Are there not instances of poverty producing famine and disease?—Yes.

You say that at New Lanark, by your arrangement of providing certain articles at the best price and quality, you deprived some persons of the business which they previously carried on, but that it was no injury to them, because they were carrying on a losing trade, how do you account that those persons were not able to make a livelihood by their trade?—Because the system was one of credit, and the parties were so demoralized, that they scarcely even thought of paying their debts; it was the common practice, after they had got into debt as deeply as they could, to adopt, what is called in Scotland, a moon-light flit, and to make their escape: upon an examination of the accounts of these tradespeople, I found that the debts due to them were enormous, and they had no chance of procuring payment; I made an offer to them, either to remove from their then situation, or to be employed in some parts of the establishment; they accepted the latter.

But if they had had some property, and carried on their business on the usual system, could there have been any doubt but that they would have made fair and reasonable profits?—They could not bear any competition with the arrangement which had been adopted; it was not likely that any individuals could withstand the system that had been introduced, because, first of all, there was a full capital to purchase all articles with ready money; then there was peculiar care taken that no inferior article should be purchased, so that no individual should be imposed upon in any way, and the payment was secure by the wages being in the hands of the company; therefore there was no risk, and the lowest amount of profit would be sufficient; also, in consequence of there being numerous applications to the same place, the rent of the warehouse, or place for the depositing of the stores, was but small in proportion to the amount of business transacted.

You have said that you wish to divert the superabundance of British capital to the purposes of the employment of the poor of Ireland; where is that superabundance of British capital to be found?—Over every part of the British empire.

What is the evidence which you have of that fact?—The immense revenues which are expended in every part of the country, the state of the stock exchange, the anxiety which gentlemen express to employ their capital, and their readiness to embark it in foreign loans.

Jovis, 26^o die Junii, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

*Robert Owen, Esq. called in ; and futher Examined.**Robert Owen,
Esq.**(26 June.)*

YOU stated yesterday that there was a great quantity of capital unemployed in the Stock Exchange which might be applied to beneficial purposes in Ireland?—Yes.

Do you think there is any capital in the Stock Exchange absolutely unemployed?—To a considerable amount, I have no doubt ; to what extent I am not able to judge.

When monied men, or other persons, furnish a loan to government, or purchase exchequer bills, are they not obliged to withdraw capital from other channels where it was before employed?—Either capital or revenue ; and of course the capital that is less efficiently employed than, in their opinion, it would be in the channel into which they are induced to divert it.

Could a loan be furnished by the Stock Exchange, or any other parties, without diminishing the employment of the people in England?—I think it might.

Explain how?—There is a considerable part of the capital in this country used as revenue, and that which is revenue may very advantageously be applied as capital ; and we know lately that very large sums have been expended in loans to South America and to Spain, and now there is an expectation of a very large sum being lent to France ; and it appears to me much more judicious and advantageous to expend those sums in Ireland rather than in foreign countries.

Supposing government were to go into the market, and sell one million of exchequer bills, must not the purchasers of those exchequer bills withdraw their money from some other occupation?—I am not sure that it would be withdrawn to the diminution of the demand for labour in this country.

Could they obtain this million without calling upon some of their debtors to pay them this million?—Probably not : there are many individuals now who have funds in the hands of their bankers ready to be applied ; such individuals are not debtors to gentlemen of the Stock Exchange.

Do you think that individuals on the Stock Exchange are in the habit of keeping large sums at their bankers unemployed?—Not for a long period, if they can avoid it ; but I heard one of the principal London bankers, a member of this Committee, say that he had great difficulty in obtaining two and a half per cent for such funds as they had to dispose of.

When you say the Stock Exchange could furnish you with five or eight millions, do you mean that they have that five or eight millions unemployed at the bankers?—No ; but the five or eight millions are now very inefficiently employed, compared with the application that would be made of those funds in the way proposed in Ireland.

Then, though inefficiently employed, it must be actually withdrawn from the occupation which it now has to be employed elsewhere?—I think it might be withdrawn from revenue, and not from well-employed capital.

Does not the capital of a country consist of its own materials, its food, its machinery, and those implements and buildings employed in production?—Most assuredly.

When a capitalist lends me money, does he not lend me the means of appropriating a portion of the before-described capital to my particular use and employment?—Yes.

Can two men or two countries employ the same capital at the same time?—It is impossible.

How then can Ireland employ a greater portion of the capital of the united empire, without depriving England or Scotland of the means of employing a greater part of it?—Because a portion of the capital of England is very ill applied ; if I stated my belief as to the extent of the misapplication of capital, I should say that at present the capital of England is not applied to produce a fourth part of the advantages that it would produce under the arrangements proposed for Ireland, and that therefore unproductive capital would be withdrawn to be applied in a more beneficial manner.

You mean then that capital would be withdrawn from some employment in England, to be more beneficially employed in Ireland?—I do not know that capital would

Robert Owen,
Esq.

(26 June.)

would be withdrawn from any occupation in this country, but I think it would be withdrawn from revenue.

In the villages you propose to establish in Ireland, do you mean to produce in them all the commodities which the inhabitants in that village are to consume?—A considerable portion of them; not all.

There would be some commodities which it would be necessary for you to purchase elsewhere?—Yes, in many situations; it would depend upon the localities of the establishment.

You would be obliged to purchase coal, copper, iron and stone?—Sometimes, and in some situations, not in others.

Cotton, hemp, sugar, wine, tea?—Yes.

In order to enable you to purchase those commodities, you would sell some of the commodities produced in your village?—Certainly.

Would you not then be liable to the variations of seasons, precisely as the producers on the present plan are liable?—Not to the same extent.

How would you guard against the uncertainty of the seasons?—By an improved arrangement in the first place, by which, in seed time and harvest, a much greater number of individuals might be brought into the field, and also by introducing very generally, in most situations, the spade cultivation; this tends very much to counteract the inequality of the seasons.

Has not any man, in the present constitution of society, the full and entire benefit of all the exertions he makes under the deductions of the ordinary burthens of the state?—It appears to me that every labourer has but a very small proportion of the returns which he might make; a very small proportion indeed.

But he has an opportunity of making the most advantageous bargain he can for himself, and he obtains all that his bargain will put him in possession of?—Yes; but under every kind of disadvantage.

Suppose this individual in your village of one thousand inhabitants, is it not true that he will have only the thousandth part of any extraordinary exertions he may make, and is it not true that he will have all the enjoyment which in his opinion may proceed from being idle and unemployed?—He will have a thousandth part of his own exertions, and also the same proportion of the exertions of all the others; and when those exertions are applied under circumstances more favourable than any which now exist, the amount of advantages to each individual will far exceed those experienced at present by any individual of the same class.

Is it not clear there will be more motives to idleness, and fewer motives to industry in your state of society, than in that which actually exists?—In my opinion quite the reverse, to a very extraordinary extent.

Would not the object you have in view of bettering the condition of the people, be more effectually secured by leaving every man at liberty to reap the full benefit of his own exertions, and instructing him in all those improved methods of production you propose to establish in your villages?—I think he would not experience one per cent of the real advantages that the same individual would obtain under the arrangements proposed.

Although the productions should, under the two systems, be precisely the same?—It is impossible that the production could be any thing like the same.

The question supposed that you instructed men, so as to enable them to produce the additional quantity you propose to produce by the establishment of your villages?—To me that appears impracticable.

Is it impracticable to give men that sort of information you propose to give them, when you have them in your village, respecting spade husbandry and other improvements?—Although I gave them the same information, if I did not give them the means to apply this information, they would fail to derive the benefit.

Would there be any other advantageous circumstances, except those which arise from the economy in the people eating and drinking together, the general system of cooking and purchasing provisions by wholesale instead of retail, and some other of those sort of advantages?—There would be many other.

Mention them?—The residence of the individuals would be far superior to the present residences of the working classes of Great Britain or Ireland; their domestic arrangements would be conducted with far less labour and much greater pleasure, and more economy; they would have, from the commencement, almost every thing around them which could contribute to their health, to their good morals, and to their comfort.

Robert Owen,
Esq.

(26 June.)

Might not many of those advantages be given to them although they lived separate, in separate habitations, and not exactly in the parallelogram you propose?—I think not at all, to the same extent, as under the arrangement proposed.

What is the ground of security for good morals?—The arrangements have been found to combine all the moral advantages which the past experience of the world enables us to give to society; the exclusion first, of all those things which tend to injure the health of the individual; the exclusion of all public houses; the exclusion of all retail trading; by which a considerable amount of immorality is produced among the working classes. Schools are also established, in which the children of these villages will be trained from infancy in a system very far superior to any of the prevailing modes of education; and the arrangements of the houses and manufactories are so formed as to place the conduct of the people at all times before the eye of the community.

You propose to raise from five to eight millions to employ the people in Ireland, how many would that employ?—That would depend very much upon the particular occupation that would be given to those individuals; in agriculture a much greater number might be employed; if manufactories are introduced, not so many; but generally speaking, it appears to me, that this loan of from five to eight millions, if applied to the population of Ireland in the manner which I recommended, would be sufficient to put that population in a state of activity that would rapidly produce a prosperity in Ireland, which would render it unnecessary for any other sums to be expended for this purpose in future, than those which would arise from the industry of the population so set to work.

In supposing the exact sum of five or eight millions, you must have in your contemplation a certain number of persons to whom you propose to give employment, what is that number?—It is utterly impossible that any one can reply to that question, unless the different manufactories or employments of the individuals were previously determined; generally speaking, I consider that sum to be quite sufficient to give employment to all those who are now entirely unoccupied, and also to give full employment to those who are now only partially employed.

Upon what principle was it you came to the conclusion that from five to eight millions was the sum required?—From seeing the effects produced by a partial expenditure in different parts of Ireland; in Clonakilty for instance.

It was without any reference to the numbers out of employment?—Not entirely.

Have you formed any calculation at all, of the number of people now wanting employment in Ireland?—It is, as I have mentioned, impossible that I can state the number; but I conceive the sum of eight millions to exceed the amount that would be required to give employment to them.

What proportion of the entire population of Ireland do you conceive to be now unemployed?—It is a number continually varying according to the seasons.

In the southern provinces, should you overrate it if you said five-sixths of the people are out of employment?—I should think that a large proportion; it would be a very extraordinary circumstance indeed if one-sixth could support the whole number occupied as they now are; I never saw a people whose labour was so inefficiently directed as theirs; if that were the case, therefore, it would follow that Ireland possesses a power of production far exceeding any thing I have stated, and, under such circumstances, there surely ought not to have been a single pauper in the south of Ireland.

You propose that all the people you employ should raise food and clothing for themselves?—Yes, generally speaking, food and clothes, and all the ordinary necessities and comforts of life.

Supposing your plan carried into execution, would not a large quantity of the food and clothing now produced with a view to the consumption of those very people, become superfluous and be without a market?—I think not, for as long as there are any wants in society, a market for those articles ought to be found elsewhere.

There is a portion of people now existing in Ireland for whom food and clothing is already produced; as you propose to produce food and clothing for those same people, will not the persons who now produce food and clothing, find themselves with a superfluous quantity for which they can find no market?—If that were the case, it would be the strongest argument for idleness that could be produced.

The question is, would it be so or not?—I think it would not be so; I think the properly applied industry of those persons placed under the new arrangements, would

359

Robert Owen,
Esq.

(26 June.

would produce all articles so much better and cheaper than they are produced at present, that they would very soon instruct those around them in the same superior mode of producing those articles; this would create a very increased market in England and Ireland and Scotland, and open to them the markets of Europe and America; because it is my intention that the inhabitants of Ireland, with their soil and climate, shall be enabled to produce both their agricultural produce and manufactured articles, cheaper than they are now produced either in Great Britain or Ireland, or any part of Europe or America.

If I produce food and clothing for one thousand persons, and you take that one thousand persons from me, and provide food and clothing for them, should I have any means of disposing of to those same persons the food and clothing I had provided?—Certainly not to the same persons.

Should I not be in want of a market for that food and clothing?—I think not.

Where could I sell it?—Wherever there was a demand for it; among some other thousand in common society.

You propose to feed those other persons; where should I find a market for my provisions?—Under the supposition that all the people of Ireland are placed under this arrangement, is that the question?

The greater portion of them?—Under that supposition, they would of course be well provided with food and clothing, and education, and all the comforts of life, and all that human beings could wish for; in that case the surplus, beyond what was necessary to store up to protect them against accidents or unfavourable seasons, would be of no use to them, and they might dispose of it at any price to the inhabitants of any other country.

According to your propositions, the people in your villages would be very comfortably provided for; but the Committee are looking at those not in your villages, but those out of them, who have produced articles; would they not be in want of a market?—Those individuals would be compelled to adopt the same superior arrangements, upon the principle, that when a new machine is introduced into any manufacture, those who have the old machines must relinquish them, and adopt the new.

Supposing the clothing of those people to be furnished, in equal proportions, by Irish and English, if they manufacture for themselves, must not that take off the demand of so much manufacture as is now furnished by the Irish or English manufacturers for the consumption of these villages?—It is true, whenever any portion of our population shall be so placed as to provide every thing for itself, they will not be dependent upon others for any thing they use; and if arrangements can be formed by which every part of the population shall be equally independent, it would be very desirable for society.

Ultimately, the Committee have no doubt of the advantages that would result from better employment, and therefore provided all those improvements were made; but as your plan is a plan for immediate relief, the Committee ask, whether its immediate effects would not be attended with those mischiefs to particular parties?—Quite the reverse: the expenditure of the proposed sum would create a considerable new demand for all the articles they would require for the building of their new premises; that sum would give an increased prosperity to the old society while the new was growing up, and give them an opportunity of taking advantage of this new arrangement, and allow time to make good use of their old machinery (if I may so speak) till they could obtain new.

Is the population of Ireland, in your opinion, redundant?—Extremely so, under the existing arrangements; it would be very deficient under the arrangements proposed.

When you say it is redundant, do you not mean it is redundant compared to the capital to employ it?—I do not mean that it is redundant compared with the capital of the British empire.

Is it redundant compared with the capital to employ that labour; when you say that the population of Ireland is redundant, do you not mean it is redundant compared with the capital which there is in Ireland for the purpose of employing the population?—No; I only mean it is redundant under the present misapplication of the industry of the Irish population; because it appears to me that it is industry that creates capital, and that capital was produced originally by industry, and can only be produced by it.

Robert Owen,
Esq.

(26 June.)

If the five or eight millions you propose to obtain were given, and you had the means of employing the people, should you then say the population was redundant in Ireland?—No; because in that case the industry of the population would be properly directed.

Would the situation of the labouring classes be one of distress in Ireland, if the capital continued the same, and the number of people were, by any unforeseen accident, very considerably reduced?—It appears to me, the first result would be the want of consumers; whether there would be more distress would depend upon the judicious or injudicious application of the capital.

Would not their situation be much happier than it now is?—It is extremely uncertain.

Does not the happiness or misery of the working classes in all countries depend mainly on the proportion of their number to the capital that is to employ them?—Not in all cases; there are many very considerable exceptions to the rule.

Do you not yourself propose to ameliorate the condition of the labouring classes in Ireland, by increasing the capital, and making it in a larger proportion to the actual numbers of the people?—Yes, but by employing their industry, through this capital, in a manner very different from its present application: it is very possible that the eight millions of capital might be so employed as to create more mischief and misery; it is from a judicious direction of this capital I expect beneficial results to arise.

Then you think that society in the early stages of its existence, when it is not in possession of the improvements you are now contemplating, cannot possibly be in a happy state?—I am not prepared to say so; it does not necessarily follow; but when the industry of any population arises chiefly from its manual powers, the value of labour must be high, and their comforts great in proportion; but when machinery is introduced so as greatly to over-supply the market, manual labour, under the present system, is reduced in value, and the working classes suffer in proportion.

Do you think parliament could supply a sufficient capital to Ireland to afford employment to her population?—Yes, certainly.

And you think from five to eight millions would be sufficient?—Eight millions would be quite sufficient.

Under the plan proposed?—Yes.

Supposing your plan was not adopted, and the government was still desirous of affording employment to the population of Ireland, what proportion of capital would be necessary, under the actual system of employing labour as it exists at present?—No amount of capital that could be employed.

If England had the ability of sparing one hundred millions of capital, you do not think we should better the condition of Ireland?—Not the general condition of the empire.

The Committee confine the question to Ireland?—The expenditure of so large a capital would give a temporary prosperity to Ireland no doubt, but it would be but temporary; because the capital would be expended in Ireland under the present arrangement, which would not, under existing circumstances, enable the inhabitants of the country to produce the articles as cheap and as good as they are now produced in England.

If the object of this government was to afford relief to Ireland, and they had the means of so doing, by furnishing capital, the Committee wish to ask you what amount of capital would effect the object of relieving the distress of Ireland, if employed upon the present system?—I do not think any amount of capital, under the present system, would permanently benefit Ireland.

Without taking into consideration the permanent benefit of Ireland, what would afford immediate relief to Ireland, and set the population to work?—Eight millions would afford a temporary relief, under present arrangements.

Do you think the employment of any additional capital in Ireland would be productive of permanent benefit, unless it was accompanied with steps to improve the moral condition of the people?—No.

Do you not know that in some of the districts you have visited, that the condition of the peasantry is infinitely better than in others?—There is a variety, certainly, in this respect.

Do you not know that in some the distress is infinitely greater than in others, at this moment?—There is a difference; and it appears clearly to me that at present,

in

361
Robert Owen,
Esq.

(26 June.)

in proportion as some parts of the country are superior in industry and comfort, other parts must suffer.

Do you not know that there are particular districts in which the peasantry are better circumstanced than in others?—Yes.

Is not that owing, in a very considerable degree, to the superior rate of wages they receive in those districts?—I can have no hesitation in saying that a high rate of labour is, generally speaking, advantageous to any population; I hesitated to give a direct answer to the question, because my own experience furnishes me with the knowledge, that in many situations high wages have been given to certain individuals, and at the same time lower wages have been given to others in the same districts, and the families of those who received the highest wages were in a situation much inferior, in point of cleanliness and comfort, to that of those who received lower wages, in consequence of the want of education and of good habits in the former.

The Committee wish to ascertain this point, whether, in the neighbourhood of great towns, where people receive greater wages, they are more comfortable or not?—I can have no hesitation in saying that where there is regular employment, there is more comfort than where there is not employment.

What would be the expense of establishing one of your villages for a thousand persons?—That would depend upon the local situation of the establishment; from 30,000 *l.* to 50,000 *l.* It would depend also upon the particular kind of manufacture to be superadded to the agricultural arrangement.

Would not your object be equally well attained, if the capital necessary for establishing one of those villages was furnished by individuals, as if it was furnished by government?—Surely, if it could be furnished to an equal extent, and with equal facilities.

If one experiment were made, and the results were such as to prove the great advantage and benefit of the undertaking, do you think there would be any difficulty in procuring even the eight millions from the private funds of the country?—I think not, or double the sum.

To what cause do you attribute that you have not hitherto obtained a sum equal to 40 or 50,000 *l.* to try an experiment which you consider so promising?—I have had more than 50,000 *l.* subscribed for some time for the purpose of putting one of them into action; there were certain obstacles which it was necessary to remove before we could commence; those are now removed, and I look forward to the commencement of one of them in Scotland in a few months; but the reason why I have been less anxious to form one single community, was my knowledge of the state of Ireland, and a considerable part of the British empire. To show the result of one of these combinations will require an experiment of four or five years: Ireland is not in a situation to wait the result of such an experiment; she requires immediate extensive relief; and I think I have facts before me, sufficient to demonstrate to all men of business, beyond the possibility of doubt, that the system which I recommend will afford that relief. To form arrangements which shall give daily, effective and productive employment to every member of the proposed associations, by which the children shall be well educated and taught good habits, and the general economy of production and consumption greatly increased, and through which the interest of the capital would be regularly paid, and the capital itself redeemed in a few years; this would be a much more advantageous application of the public funds than even to erect bridges and make canals and roads were they are not immediately required; in the one instance the money is expended for an uncertain and distant return; in the other, the interest would be regularly paid, and the capital redeemed in a short period; and the largest amount of industry would be immediately and directly called into action.

Why do you state that government would employ the people in making roads and bridges which are not wanted?—There has been a very strong inclination on the part of government to give employment to a part of the population of Ireland, and they have thought that the building of bridges, the forming of harbours, and the making of roads were the most efficient modes of expending the public money; it appears to me that these works afford but temporary employment, and frequently do not return capital or interest to the public, or produce any important benefit to the district. It is well known that there are, unfortunately, too many examples in Ireland to prove the truth of this statement.

What do you consider to be the effects produced upon the markets and habits of the

Robert Owen,
Esq.

(26 June.)

the people, by opening a road through a mountain district where no road hitherto existed?—Very beneficial to some parts of the population.

In what way is it beneficial?—By opening a communication between one part of the country and another.

Does not it enable that produce to be brought to market which, without the opening of such a road, could not be brought to market, or with very great difficulty?—It often happens that those communications are made to give facilities to parties coming to a market from which they were before excluded, but which market being already fully supplied by others, the latter, under the present arrangements of society, suffer in consequence of this additional competition.

But where it enables produce to be brought to market, which otherwise would not be brought, is it not an advantage to the growers of that produce?—To those individuals who bring it to market it is generally a benefit, but to those to whom this is brought in competition, it is an evil under the present arrangements?—Do you not think that any measure which tends to increase the produce brought to market, and thereby to increase the means of consumption to the people at large, is a measure of benefit to the people at large.

Under a proper arrangement of society, every increase to produce, as long as there was a want in society, would be a very considerable benefit; but when we know that for many years past, and particularly since the termination of the war, the great sufferings of Ireland, and of many parts of Great Britain, have arisen from an excess of supply beyond the demand which the existing state of society admits of, it does not appear to me that, under these circumstances, much benefit can be derived from an increase of productions.

Would not the effect of your plan be to increase production?—It would.

Would that increase of production be a benefit or a disadvantage?—Under the new arrangements proposed, it would be a very great benefit.

What are the circumstances that distinguish the new arrangement from the existing one, that would make an increase of the production in the one case a source of mischief, and in the other of benefit?—It would open the means by which labour could be exchanged for labour in the most advantageous manner, because there would be no other limit to the extent of exchange than the amount of labour in society; now, however, labour can be exchanged for only money; and it is impossible that gold and silver only can ever again be procured as rapidly as real wealth can be now created.

Do you mean that under the new state of society the means of consumption would be increased in a greater proportion than the increased production?—Yes, to a very considerable extent, for some time.

How do you conceive that the means of consumption would be greater than under the old system?—The arrangements are devised to leave a much larger proportion for the use of the producer, than the present system admits of.

Do you mean there would be a different and more equal distribution of property than under the present system?—A much superior distribution of property, and more useful to all parties.

Would it be much more equal?—Yes.

Would it tend to almost perfect equality?—It would not render it necessary to alter the situation of any of the higher ranks in society, but it would give a greater supply to those who now produce: the arrangements are so formed, as by the aid of the very extensive modern scientific improvements, as to enable them to produce and consume much more abundantly than they can do in the state in which they are now in Ireland; they would have a considerable addition to their own comforts, and produce a larger surplus than they do at present for the higher ranks.

As far as the system is applicable to the producers of national wealth, it has a tendency to establish an equality amongst them?—Most certainly; and I consider that many advantages will arise in consequence.

Where would the line of distinction be drawn by you, between those individuals amongst whom this perfect equality would exist, and the other classes of the community?—Those individuals now in the lowest situation in life, and who are a burthen to society, would, by being placed under these new circumstances, create sufficient for themselves, and would derive many other advantages from being under this system of equality; they would not, however, interfere with the inequalities existing out of their communities; such inequalities might subsist as at present.

Are the Committee to understand, as far as the proposed villages are concerned, there would be a perfect equality amongst all the inhabitants?—Yes; as far as nature will admit.

What

Robert Owen,
Esq.

(26. June.)

What system of government would you apply to the inhabitants of the villages, amongst whom there was this equality?—Parochial government, as now adopted in parishes; the members of which, however, after the first generation, would not be elected, but would serve according to age.

No such principle as that to which you have adverted, has been introduced in your establishment at New Lanark?—I am training the individuals for that purpose, and have been doing so for some time past.

But the ordinary government of New Lanark is under the control of the usual laws of the land?—Most assuredly; in the first instance in those communities, it is quite necessary that persons should be elected to be at the head of the different departments, who understand the employment in which they will be engaged; but in future, the children, after having been properly trained, will be capable of taking their due share in the government of their community.

What is your system of education; is the foundation of it religion, or not?—The foundation of the education is, I think, the most pure christian morality that can be conceived; the doctrines of the present system are regularly taught at New Lanark, and I think the inhabitants are now, at the present moment, the most religious people to be found among the manufacturing populations in England, Ireland or Scotland.

By whom are they taught religion?—By the masters and mistresses in the schools; by the clergymen in the neighbourhood; and by their parents.

Who has the principal government of them as to religion; the minister, or the persons that are nominated by you?—The population attend church more regularly than any manufacturing population I ever saw; there are dissenting churches in the establishment, and three churches in the neighbourhood.

Is every thing that is produced, consumed in a country?—That depends upon whether it is sent out of the country or not.

If it is sent out, something else comes in instead of it?—There may be a great deal sent out, and very little brought in, which has been the case of our foreign trade.

If by any means we find out an improved mode of production, and therefore obtain a greater quantity of produce with the same quantity of labour, have we not the power of consuming more?—Not under the present system.

What becomes of it?—It has been wasted to a very considerable extent in our foreign trade; we have exported a very large amount of valuable labour, and received a very small amount of labour of less value in return.

Supposing foreign trade was prohibited, and we consumed all the articles we produced, would not an arrangement that would enable us to produce more be a benefit to some party?—Not to the producers, under the present arrangements.

What would become of the surplus production?—The lower classes would be placed in a state of greater slavery, and the higher classes would be injured by the addition to a supply which, already by its excess, too often injures them bodily and mentally.

Would the additional quantity be produced if the lower classes could not purchase it, and the higher classes did not wish it?—No.

Allowing that the labouring class would suffer very much from this, would not the higher classes be benefitted?—I think not; because, after human nature is supplied with a full quantity of the best food and clothing, and the usual comforts of life, every addition beyond what shall be found to be actually productive of benefit will be injurious.

Did you ever know a country circumstanced, as has been supposed, which did not consume what it produced?—I know of no country that does not endeavour to dispose of its surplus produce.

Did you ever know a country that did not either consume itself the commodities it produced, or exchange them for others?—No; but I have known many countries that did produce and apply a large proportion of its labour to create that which was of little or no value, while the greater mass of the people were deprived of that part of the produce which was essentially necessary to them.

Is there any other advantage, under the same amount of production, which would attend the establishment of your villages, excepting that of a better distribution of the actual produce among the inhabitants of the village?—Yes; they would have a superior mode of production.

The question was, under the same amount of production would there be any other advantage, except the better distribution which would take place?—They would

Robert Owen,
Esq.

(26 June.)

consume much more advantageously for themselves; they would have greater comforts with greater economy; their children would be better educated, and placed under very superior circumstances.

Does not it appear surprising to you, that in a country where capital abounds, where millions are easily found for the building of bridges, docks, and cutting canals, and undertakings of all sorts of expensive concerns, that a capital is not readily found to speculate on an undertaking so very advantageous as the one you propose?—Not in the least.

How do you account for it, that no one is ready to engage such trifling funds in an experiment which you say you can demonstrate to be so very advantageous?—I have mentioned that there were upwards of 50,000 *l.* already subscribed, and that the parties are anxious the plan should be carried into execution; but when I consider that this requires a combination of a considerable extent, and formed in opposition to the habits of the last six thousand years, I am not surprised at the difficulties that I have experienced; on the contrary, I am surprised they have not been greater. If an individual were to say to day, I can form a machine founded on new principles, and which, at a less expense, will produce twenty times the result of the steam-engine, there would be very few individuals willing to engage their capital in such a scheme, without a practical demonstration; and, in the system under consideration, the difficulty is of course increased in proportion to the numbers and the capital required to form the combination.

In what respects do you consider your scheme so advantageous?—It gives at once a decided preference to unity and co-operation over the system of individual opposing interests by which, as it appears to me, all parties suffer grievously; my own conviction is, that the individual system does not and cannot obtain one per cent of the advantages from capital that this arrangement would produce.

You have stated that some of your calculations, with regard to the benefit of employment, were founded upon the observations you made at Clonakilty, in the county of Cork; what were the observations you there made?—That by the introduction of a moderate capital in that neighbourhood, the linen trade was extended to what is there considered an important amount; this gave employment to a considerable number of men and women in that district, but I consider their labour to be almost the next thing to being thrown away; the women earned 2 *d.* the men 7 *d.* or 8 *d.* by a very hard day's work. The consideration for any government, is, by what means can labour be applied to produce the best result to the individuals employed, and the country at large; a consideration heretofore scarcely attended to. We heard yesterday that the linen trade that has been introduced at Clonakilty, and other parts of the country, has been supported by a bounty; therefore, though it affords some small return to those employed in it, it cannot be a trade profitable to the empire.

Do you conceive, under your regulations, the linen trade of Ireland would be supported without that bounty?—Yes; or it would be of no value.

Would the production of the linen be cheaper than it now is?—Yes, very much so.

In what part of the process, in the production of the flax, or in the preparing it for manufacture?—In every part of the process, from the commencement to its termination.

Would it be effected in the flax by an improved system of culture?—Yes, to a considerable extent.

By the application of scientific farming?—Yes.

Is there any other circumstance that would tend to make the growing of flax cheaper than at present?—By an improved system of cultivation, by the introduction of the best machinery, and by combining, under one efficient system, every part of the process, many expenses now incurred would be saved.

Do you not think those advantages might be attained, leaving society as at present constituted, by instructing the people in an improved system of agriculture?—Not to the same extent.

What will be the difference?—We should have labour of a very superior quality, better supported, at less expense.

Under your scheme, you state that eight hours work would be all that you would require for working men?—That would be found much more than necessary, after the system should be in general practice.

How

365

Robert Owen,
Esq.

(26 June.)

How would the people be occupied the rest of the time?—In improving themselves in various ways, and in the rational enjoyment of human life.

Do you think that any scheme that would leave the great mass of the population without employment for so large a proportion of their time, would be desirable?—Provided they were well educated and well placed, it would be a great advantage.

Having stated you conceived a saving would be effected in the culture of flax, do you conceive that any saving could be effected in the manufacture of flax into yarn?—Yes; I think superior machinery might be introduced for spinning and weaving, and that the bleaching establishments might be more conveniently placed for the economy of the manufacture.

Might not those improvements take place under the existing state of society?—Not in Ireland, at present.

Is there any other cause than the disturbed state of the country?—Yes; the want of the skill and regular habits necessary for the cultivation of the material, and management of the machinery and manufacture.

By the establishment of education, do you not think that superior skill might be given?—Under the present arrangements of society I do not think there could be introduced a good system of education, much less the means of acquiring such habits as would enable them to enter into competition with the people of England.

State the distinction between the plan of education you would suggest, and the system of education we might be capable of carrying into effect in society as now constituted?—Within these villages there is a certain population, intended to be associated as one family; this will provide a certain number of children under different ages: I find it is necessary there should be a certain number of a similar age associated together, to educate children in the best way; it is also necessary they should be excluded from the society of those who are ignorant, and have inferior and bad habits; by any of the arrangements in society at present, I do not see that these objects can be attained. It is also necessary to have a much more enlarged and convenient establishment for the education of children, to do justice to them; and I am prepared to say, that under the improved plan proposed, children may be better educated for 2*l.* a year each, than any children are now at 100*l.* a year. Such will be one of the benefits that will arise; and this is not theory, but I am prepared to show, that children are actually educated at present for 2*l.* a year, and better educated than many children whose education has cost their parents 100*l.* a year.

Do you not conceive that an establishment like that you have described, might be formed in any great city, at the present moment?—Not with advantage, for the children would be injured by all the bad habits of that great city, and by evil examples.

Do you refer to the examples they may observe, on returning to their own families?—They certainly would be injured in this way. In the establishment I have just referred to, the children do return three times a day to their parents, and are with them at night; but if those children were less exposed to the influence of the inferior habits of their parents, we should make a greater progress than at present; but still there has been the progress made which I have stated, and it has been possible to improve the habits of the parents so much, that the character of the children is not deteriorated in the same degree in which it would be, if they mixed with those of the working classes, whose habits had not been improved.

At New Lanark, do you conceive, the total abstraction of the children from their parents would give your system greater efficiency?—In the first generation there would be a decided advantage in separating them, with regard to the children themselves, but as it would tend to diminish the natural affections between parent and child, that system has not been adopted, nor is it recommended. It is intended that the children shall associate more with their parents under the new arrangements than they can do at present.

In the establishment for education at New Lanark, are any means taken to instruct the children in habits of industry?—Yes.

State what those means are?—All the children born and educated at New Lanark have employment found them as soon as they attain the age of ten; they are not obliged to work; if their parents prefer keeping them in the school till twelve or fourteen, they may do so, they are not allowed to be employed till ten, but at that period they are employed wherever they like; and, in consequence of these children being trained in a superior manner, they make better workmen.

Robert Owen,
Esq.

(26 June.)

Are they able to earn higher wages, and obtain more constant means of being productively employed?—Yes.

Do you conceive that an advantage?—Yes; I consider the education given to those children more valuable to each of them than if I were to give him 200 l.

Is it felt as a reward for the superiority of their acquirements?—They know nothing of individual reward; they are trained without any individual reward, or emulation or punishment.

Have you reason to believe that this additional comfort, the result of their superior skill and acquirements, operates as an excitement to the children so educated, to a greater exertion and employment of their intellectual faculties?—These children seem to have a pleasure in making the greatest possible progress in every part of their education; and in all that is placed before them they do make great progress, and do not appear to have any pecuniary consideration in view; they know nothing of it; it is the pleasure and delight they derive from each other's society, and the easy progress they make, from the manner in which instruction is conveyed.

But, in the result, they do obtain a higher reward than if they had not been educated in that manner?—They are all admitted to constant employment.

In the new state of society to which you advert, there would be no additional reward for any individual, however superior his skill might be?—Neither would he have the least inclination for it.

Upon what authority do you ground your opinion, that the children of the lower orders are not educated at less than 2 l. per head?—I must have been misunderstood if I was supposed to have said, that the children of the lower orders were educated for any particular sum.

Do you not know, that in this country, children are educated under a classification at considerably less than 2 l. per head, say 1 l. per head, as at the national schools?—I am aware that the children of the lower class are educated at an expense of from 8 s. up to about 30 s. per year. The education I formerly gave to the children at New Lanark, did not exceed 20 s. a year, but from the experience I derived from expending that sum, under an improved arrangement, I was induced to try the experiment of expending more, and adding other advantages, which created an expense of another 1 l. a year; and I know of no money that we, as cotton spinners, could expend so productively as this additional 1 l. in the education of the children; for we have, by this means, given them advantages they could not obtain for 100 l. elsewhere.

Do you mean, to say you combine with your system of education a knowledge of manufacturing?—After a certain period of life; but those children, previously to being taught any manufacture, are perhaps better instructed than any children in common society; I should hardly go too far in saying, that these children are as well instructed as any children are for the substantial purposes of life, in any situation.

Have you seen the education of children in the national schools in this country?—I have watched with great interest, the progress of education in the national and British and foreign schools; I was extremely interested in them; from the commencement of their establishment, and have been much in both, and seen the progress they have made; but still I am prepared to say, that neither of those systems can be called a system of education.

You think the system of the present national schools of this country does not give efficient education to children?—Not so efficient as might be given.

Do you find that the progress of every one of your children is the same?—No two children are alike at birth, and no two are alike at two years of age, when they are received into the schools; but by a process of education completely in unison with nature, we find we can do far more for any child than has been hitherto accomplished.

In a class of ten children of the same age, one will get on much faster than the others, do you find, in general, that that produces no effect upon the mind?—As long as we proceed upon the common principles and notions of education, we find a considerable difference in the progress of children, but when we bring all of them to that department of our system, which I conceive to be completely in unison with nature, the progress is much more equal; for instance, were I to endeavour to instruct ten children, through the medium of language, in the knowledge of this pen and ink, I should find a great difference in the intellect of those children in forming

367
Robert Owen,
Esq.

(26 June)

forming a conception of what I meant by the terms I should use, but if I brought the whole of those children into this room, and showed them the pen and ink, they would all have a clear and distinct idea of both.

Supposing two boys to be called upon to explain that pen and ink, and one answered more readily than the other, do you not find a difference of feeling in him?—I readily admit there are no two human beings alike.

Is there any emulation?—No individual emulation is encouraged.

Therefore you mean to say, that the effect produced upon their minds is precisely the same, whether they do well or ill?—I do not state that the same effect is produced upon the minds of those individuals; but, in consequence of the manner in which they are trained and educated, they have a constant desire to make as rapid a progress as their constitutions will admit.

Therefore do not you suppose, if *A.* makes a more rapid progress than *B.*, he rejoices at it?—He would naturally derive gratification from his own progress.

Sir John Newport, Bart. a Member of the Committee; Examined.

Sir J. Newport,
Bart.

ARE you acquainted with the establishment of any school for the purposes of education and industry in the county of Wexford?—I am; there is a school established at Banno, in the county of Wexford, to instruct children in an improved system of agriculture, and training them for the purposes of becoming stewards of farms, and introducing into the different parts of the country an improved system of agriculture. The plan was formed by Mr. Hickey, a protestant clergyman in that part of the country, under the auspices of a Mr. Boyce; the co-operation of the Roman Catholic clergyman was very readily obtained, which was conceived the first obstacle; however, both of them have most readily concurred, and the superintendence of the school is principally under the direction of Mr. Hickey. The boys are taken at an age not less than twelve; I think they are apprenticed to Mr. Hickey for those purposes for five years. A certain sum is paid by the parents, or the person who sends them there, for each boy; it has been now raised to 15*l.*; it was originally 10*l.*: they are sent there with two suits of clothes, one a working dress, and the other for Sunday's wear; and having been so supplied with two suits of clothes, and 10*l.* at first, now 15*l.*, they are maintained and clothed, and kept perfectly well during the whole of the five years. The establishment has now gone on for two or three years; and I can take upon myself to say, that having sent one boy there at the age of thirteen years, after having been there ten months, when I was in Ireland last, the boy came home to see his parents, and I never saw so striking an alteration: the boy himself told me he felt himself a completely different being; that he had acquired habits of knowledge, and consciousness of comfort and satisfaction as to himself, that he never possessed before; and he was quite satisfied that the continuance of his education there would put him in a situation to be comfortable and happy during the rest of his life. It was remarkable to hear him give that testimony, and see it confirmed by his appearance; he was a boy about fourteen years old. I am quite satisfied, from that and the constant testimony I have received from others, that the benefit likely to be derived from it will be very great indeed. Boys have been sent from different parts of Ireland, and a person has been brought from Scotland, skilled in the improved system of agriculture, who is the servant, in fact, of this clergyman, and instructs these boys; they are instructed in reading, writing, and arithmetic, and employed in the labours of the field and gardening; they are taught all these things, and their moral habits are strictly attended to. There is no interference with their religious persuasions, and the clergy agree as to the mode of training them; there is no attempt at proselyting them, and I augur the most beneficial consequences from these results. I am sure that an establishment or two of that nature in each county, if gentlemen can be found who will devote themselves with that unwearied attention these gentlemen have done, and if some of the landed gentlemen will follow the example that Mr. Boyce has set, I am quite sure they will be productive of the most beneficial effects; and I am the more satisfied of this, because agricultural as a large part of Ireland is, one of the best modes of education that can be employed will be, the training them to a knowledge of every thing connected with agriculture, and in that way making them useful to the community.

Do you think it is within the reach of the majority of the Irish farmers to pay that 15*l.*?—I do; I have no doubt of it: there are twenty-four boys there now. I will only add, that to my certain knowledge, in the districts I am peculiarly connected

Sir J. Newport,
Bart.

(26 June.)

nected with, I know that of late their means have been considerably diminished, because the price of agricultural produce has been reduced; but nothing formerly was more common in the districts I am connected with than for the farmers to give 250*l.* or 300*l.* with their daughters.

Is this school you have mentioned a solitary instance, or are you aware of any others of a similar kind?—I know of no other.

Do you not conceive that the result of similar establishments will be greatly beneficial?—Very great indeed; it is only necessary to mention the good effects that arise from this.

Do you conceive that the ordinary system of school instruction in Ireland, without introducing any instruction in the habits of industry, is or is not a defective system which fails in its object?—Very defective indeed. I believe myself, unless you can accompany the general instruction you give the children with the introduction of that kind of useful knowledge adapted to their situations, you are very defective indeed. I do not consider the education perfect.

Would there be any serious difficulty in connecting this instruction in industry with instruction in letters?—None whatever.

Did you find what line of usefulness that boy had been brought up to?—The boy appeared to me to have a strong feeling and sense, that he might derive very considerable additional improvement to any that he had been before taught; for he brought home with him drawings, which he had got from the Scotch instructor, of improved implements of agriculture, which he had copied out, and showed me with very great pride and satisfaction; he told me he was satisfied of the defective mode they had pursued, and what could be done by this improved mode; that showed me he estimated those improvements. This boy was by no means a boy whom I should have looked upon as of a superior disposition or superior acquirements to the common class of the community; but I have before said, and I again repeat, that no person who had seen him ten months before, and then saw him, would have known him to be the same boy; I am quite satisfied, that not looking at his features, but only conversing with him, he would not have known him as the same boy.

Had he been instructed in gardening or ploughing?—Gardening; when they get older, they go out to plough; and in the statement I have given in, the Committee will find the manner in which they are employed; it was communicated by Mr. Hickey to a society in the north of Ireland, and it is published in their transactions.

You have said that they commenced their education at the age of twelve?—No, they make a rule not to take any child under twelve, but they do not exclude boys of a more advanced age; they take them as far as fourteen; they do not take any after fourteen.

They do not take them under twelve?—No.

Do you not think that this system might follow previous education, under the system of the national schools?—No doubt; I would only add, that the reason why I apprehended that the age of twelve was adopted, was this, that it was intended to make the school as economical as it could be, and therefore they did not take very young children, because, if they did, their labour would not be productive; there would have been a much larger sum required to have kept those children at a period of life when their labour could not be productive in the same kind of way.

Are you acquainted with the present state of the population in the south of Ireland, as compared with the means of employing them?—With some parts of the south I am.

What parts?—The vicinity of the city I represent principally, but I was through a considerable part of the county of Cork last year.

Is there a considerable proportion of the population of those parts without the means of adequate employment?—I should say within a certain distance round Waterford, the population is much more actively and generally employed than in most places, and for this reason, that during eight months of every year the city of Waterford is in a state of activity, owing to the provision sellers, and the bacon trade, and the butter trade; the making up of the bacon employs a vast number of people, and at so much greater wages than the ordinary wages of the country, as enables them to make provisions for the other four months when the work is slack, so that the people employed there, find very little occasion to seek for the means of employment during the other four months; some of them do work at farming-work at other times; and what is peculiarly advantageous is this, that the cessation of the demand for labour among the sellers of bacon, is at the very period of time when

369

Sir J. Newport,
Bart.

(26 June.)

when the agricultural demand for labour comes in aid, so that these men get a price for their labour greater than in any other place. Two-thirds or four-fifths of the bacon of Ireland is made up in the district of Waterford and Clonmell, or comes down to Waterford; under those circumstances, that population, of course, has a much greater demand for its labour. In the county of Kilkenny, within a certain distance of Waterford, there is a great demand for labour, because there is an increase of tillage and a ready demand for the produce, that is, at whatever price the demand of the day will furnish. In the month of October I was in part of the county of Cork and Tipperary, there I found the demand for labour very small; the people, in a considerable degree, were unemployed, and they consisted, in a very great measure, of persons formerly employed by the gentlemen in that district, when they kept up their establishments in the way they do not now; they gave employment to a great number of people who are now out of employment, and they increase the number calling for agricultural employment; they were employed in the gardens and domains of the gentry. A considerable portion of the disturbance that has arisen, has been from a diminished demand for product having caused the middle-men, who held a good deal of property, to be ejected from their farms and thrown entirely on the community; they are exactly that description of people, who having been accustomed to the advantages of life in a considerable degree, are divested of every thing like the means of enjoying life in the way they did before; these are desperate fortunes, and I do believe, myself, that a very considerable number of those who took the lead in the disturbances in the neighbourhood of that country, are of that very description of people who are ripe for any thing, from being reduced from affluence to beggary. I will instance a case which I know to be a fact: I was walking with a relation on the road in that county, discoursing on this very subject, and mentioning my apprehensions from those people becoming leaders; while I was conversing, he checked me; a person passed us shabbily dressed, yet having more of the appearance of a gentleman than the ordinary rank of society; and after he had passed us, my companion said, "there is a man of the description you have been mentioning; within three years that man was in possession of 400 *l.* a year, very well secured on the landed property he held on lease: he is divested of every thing now, and he is not worth 1 *s.*; he has two sons who have been educated in this way hitherto, living well and riding good horses, being in the better rank of society; they are now beggars, and that man and his two sons, in case of any disturbance, will be leaders in the district; they are all of high spirit, very desperate in point of character and fortunes, and very likely to take the lead in disturbances of this nature." I mention this to show the probable means by which those disturbances have got to the height they have, otherwise I could not account for that district being in the state it now is, because it is better inhabited by the resident gentry than any other I know; I know of no other where the number is so great as it is there, but there is in the vicinity a considerable quantity of absentee property, in consequence of the circumstances I have stated.

Then are the Committee to understand, that in the neighbourhood of Waterford where there has been employment for the people, there tranquillity has prevailed; and in parts of Cork where there is less employment, there disturbances have arisen?—Precisely so; there has been no shade of disturbance in Waterford any where, and I attribute it to that very point I have mentioned.

And as a general proposition, do you connect disturbance in Ireland with the want of employment?—Very considerably.

Do you not know, that the yeomen of England are in many countries equally distressed with the middle-men you have described in Ireland?—I do not doubt it in the least, but I am not able to speak so much to England from my own knowledge.

Have not those resident gentry suffered very greatly in their means also?—Very greatly indeed.

Have you any doubt that the resident gentlemen and landlords in Ireland have suffered in a great degree, as well as the individuals you have mentioned?—I have no doubt of it, and that is one of the causes of the people being unemployed; they have been obliged to dismiss from their employment a number of persons who used to be occupied upon their estates.

To what cause do you attribute this general impoverishment of the high and low classes?—The diminished value of the produce of the country, which has disabled the people from paying the rents they did pay. I believe in that part of the county

Sir J. Newport,
Bart.

(26 June.)

of Cork, the land was let at much higher rates, proportionably, than it was in the district about Waterford, notwithstanding the advantages of export, and the manner in which produce could be brought to market, were much greater in the vicinity of Waterford than the county of Kilkenny, because it was much nearer to the market; yet the land in the county of Cork was let higher, the consequence was, that the moment the price failed the peasants were disabled from paying their rents.

Does the fall in the produce of the country appear a sufficient cause for the present distress existing in Ireland?—Certainly not: the fall in the produce I look upon as a very prominent cause, but not the only cause. I believe a great many causes indeed have conspired to it. I believe, myself, that the fall in the price of produce has not only been in itself the reason why the rents have not been paid, but that in many instances, where the rents could have been paid, and moderate rents have been demanded, it has been made a pretext for withholding the rents, even in cases where lands were let at a very moderate tenure. As to myself, I know that the people I have had the greatest reason to complain of, have been the people who have been let at the lowest rate. Some people, who have had their ground almost for nothing, have been the most deficient in the payment of their rents.

Do the means of employing the people depend upon the price of the produce, or the quantity of it?—To that I should answer, if it is spoken of with reference to what I have just now said, when I spoke of the means of employing the people, that I spoke of the abstraction of the means of employing labourers, from the absence of those gentlemen who did reside there, and not with a view to labour, but their own gratification and indulgence—I mean, the employment of the capital of a gentleman for his own advantages and comforts. The fact is, that it was the habit of the gentlemen of Ireland, to keep a much larger quantity of land in their hands than has been generally the case in this country: under these circumstances, they kept in employment a much larger number of people dependent upon them, who were not in the ordinary course of occupation for productive labour, but to keep up the ornamental appearance of the domains. It is in that respect that the increase of assessed taxes in Ireland has borne so heavily upon the community at large, because, before the Union, no such thing existed; the consequence was, that the habit was, to keep as many people about them as they could.

Has the general failure of the banks, in addition to the failure of the produce, tended to prevent employment?—Yes, temporarily, very considerably. I believe, myself, it has been temporarily a very great drawback, and worked a very great injury; but I do not know that ultimately it may be injurious. A vast deal of property was lost, but a considerable deal of it had been embarked in speculations of a very idle nature, which had been facilitated by the very easy credit they obtained at these banks. I believe the demand is now supplied by the issue of Bank of Ireland paper, which is not obtained so easily.

When you spoke of the distress of the country, as produced by those causes you have alluded to, do you not conceive there has been a reciprocal effect, and that the disorders of the country that have grown out of the distress have contributed to aggravate it extremely?—Certainly; there is not a doubt of it. I believe, myself, that the disorder has produced this additional bad effect, that it has created a great indisposition in those people who have the means of embarking in useful undertakings, to engage in them at all, because they have looked upon the convulsion as of that nature, that it might throw them into the same situation in which they were in 1798; and therefore, there is a kind of husbanding the means they have, and bringing it within their grasp, to convert it into the means of subsistence. I believe, in that respect it is injurious, because it paralyses the exertions of the country.

Can you form any idea of the deficiency in respect of the rent in Ireland?—I have no idea; I cannot give any thing like an adequate idea to the Committee: I believe it is very different in different places.

Have you any doubt that in some places no rent has been received at all?—No doubt of it, and in other places the rent has been very tolerably received; I beg clearly to be understood that the establishments, like that at Bannow, to which I have adverted, are of a nature that though they might and ought to receive assistance from government, can never be made with any degree of advantage, but on the contrary with injury, if they were considered actual establishments of government.

They must be the work of individuals?—Yes, to be beneficial.

You do not exclude, in the answer you have now given, any assistance derived from government?—No, but I deprecate excessively considering them as government

371

ment establishments, or under government influence; they must be the work of individuals and controled by individuals, though they would derive very great advantage by receiving additional assistance from government, commensurate with the exertions of the individuals, but the control ought to rest with the individuals contributing.

Sir J. Newport,
Bart.

(26 June.)

Robert Sterne Tighe, Esq. called in; and Examined.

*R. S. Tighe,
Esq.*

ARE you acquainted with the present state of any parts of Ireland?—I conceive I am very well acquainted with the state of the counties of Westmeath and Meath.

Can you inform the Committee whether, comparing those counties with the counties of the south and west, the condition of the people may be taken as generally better than the situation of the peasantry in Munster and Connaught?—I should suppose that the situation of the peasantry in Meath and Westmeath, particularly Westmeath, is better than what I have observed or heard of the state of the peasantry in Munster and Connaught.

What is the state of the peasantry in those parts of Ireland you are acquainted with, with reference to employment?—I believe the documents that were laid before the Irish Committee in the last year have been submitted to this Committee. I have sent over accurate lists of the persons out of employment in my parish, taken with the greatest care and attention, signed by the protestant and catholic clergyman, and a respectable farmer in that neighbourhood; and there were at that period two hundred and sixty odd individuals, having families to the amount of near one thousand four hundred individuals, who had not been able to earn three months provisions for themselves and their families during the preceding year, and then out of employment.

What is the entire population of that district?—The population, under the return made some years ago, in which I took an active part, was about five thousand souls, I believe: under the late return, I understand, the population was found to exceed that by a hundred or two; and I should conceive one-fourth of the working population of the county of Westmeath had for the last five years been destitute of employment.

At the time that that return was made there was much general distress prevailing in that part of the country?—Nothing in comparison of the distress which prevailed in the south and western parts of Ireland; it was much greater in Munster and Connaught; but it was very great. There was no famine in Westmeath.

Had there been any failure of the potatoe crop?—No.

So that you conceive the return you made may be taken as the average return for the last four or five years?—I have had a similar return made in 1817, when there was great distress, and the return last year exceeded it by about thirty or forty individuals. I might just observe that I have been a witness to three periods of nearly famine and great distress in Ireland; one immediately after the Union in 1804, and another in 1817, and the other last year. During the two first I was present upon my estate, and I took a part to enable me to form a judgment of the causes; and it appears to me to be a very decisive fact, that in proportion as the distress has increased, provisions have been cheaper: in the first of the periods, the oatmeal, the food of the Irish most during the summer months, was at 24s. the hundred, potatoes 12d. and 14d. a stone; during the second period, oatmeal was 26s. a hundred, potatoes about 8d. or 10d. a stone; during the last year, oatmeal was 8s. a hundred, and potatoes were at 2½d. or 3d. a stone; and at each successive period it has been found more difficult to afford relief when the provision was cheap than dear; which showed it is deficiency of employment that produces the difficulty of affording employment, rather than the high price of provisions: in fact, they were in greater distress, because means could not be afforded to relieve them at the latter period than the former.

What is the average price of potatoes and oatmeal?—The average price of oatmeal, which may be considered satisfactory to the buyer and seller, is about 15s. a hundred, or from 13s. to 16s. or 17s. a hundred.

You do not mean it sells for that now?—I speak of the period when I was in Ireland; I have been absent for the last four years, and I know provisions have been extremely low; but I know also that the distress of the people has increased rather than diminished. As to potatoes, I think the average price may be taken at 4d. or 5d. per stone.

R. S. Tighe,
Esq.

(26 June.)

Did you not state, that in 1822, when there was great distress, the price of potatoes was from $2\frac{1}{2}d.$ to $3d.$?—Yes, in that part of the country, and when the distress was so great in the southern parts of Ireland.

In ordinary times do you mean to represent the price of potatoes as being from $4d.$ to $5d.$?—I should suppose from $5d.$ to $6d.$ a stone people paid, when oatmeal was at $14s.$ or $15s.$ a hundred.

Of what market are you speaking?—The market of Rathboyne, the Old Castle and Kells, and round the borders of Meath and Westmeath.

Are potatoes more liable to accident from seasons than wheat or oats?—I should suppose they were; but I am not competent to give an opinion upon that.

Of what extent of district do you speak?—Of a district of eight or ten miles round my own house.

Is the population in that district in the habit of resorting to markets for their supply?—Yes, for their summer supply; for the oatmeal the peasantry resort to the markets, or to the neighbouring farmers, who would take their meal to market if they did not find the people of the neighbourhood come to buy it.

At what period of the year does the peasant go to market, or the neighbouring farmer?—About the month of June they begin; the potatoe crop is then very nearly exhausted, and they have recourse to the oatmeal: the periods in which they have the greatest pressure, and stand in the greatest need of assistance are, the summer months of June, July, August and September, before the potatoe crop comes in again.

In general, does not the peasant in that neighbourhood till the ground which he holds for his own support and that of his family?—Yes.

The peasant does not buy potatoes?—No, he does not; they do not go to market for their potatoes.

They depend on their garden?—Yes, they do generally.

You say one-fourth of the population was out of employment in three or four successive years, how were they supported during those periods?—I conceive they have been out of employment from the poverty of those who may be called the rich: I conceive the great portion of the misery that the labouring population have endured for the last five or six years, has been owing to the inability of their former employers to give them employment; I expended in twelve years upwards of $10,000\text{ }l.$ in labour in my neighbourhood, which I gave them in consequence of not receiving my rents.

By what means were those people supported during the time they were out of employ?—The number of people supported in Ireland by charity to the poor is quite inconceivable; they must be supported either by charity or by pillage and plunder, which has led to the excesses and outrages which subsist at present in Ireland; which no man with eyes to see or ears to hear could have avoided seeing, was impending for want of employment, and to that want of employment I attribute every thing that now affects and disgraces that country.

Is the want of employment much greater now than it was?—Yes, infinitely.

To what cause do you attribute that?—To the cause that lessened my own means; I had seventy labourers upon my books, having families to the amount of three or four hundred individuals, who might come to work every day in the year; from the change of times, I do not say what that is owing to, I became unable to do that; and I know that has been the case with others; because in 1817 I was enabled to form a plan in my parish by the co-operation of several proprietors, some absent and some present, who joined in setting on foot works that gave employment during the summer of 1817 to upwards of four hundred labourers; I made a similar application and used every effort in my power last year to obtain a similar co-operation, and I could not obtain it; I found that those gentlemen who had contributed before were unable to do it; and I am convinced that the labouring population, on large estates, know and feel that the poverty of their landlords has been the cause of their own distress.

Did that arise from the fall in the price of agricultural produce?—Indisputably; the decline in the property of landlords has been the result of what is called a transition from a state of war to a state of peace, what has led to that I know not; and in a great degree, our great improvidence in not having foreseen it and guarded against it; if we were to be the only sufferers we ought to bear it, but the labouring population of the country are starving principally from that cause, and I have no hesitation in saying, for the last five or six years we have seen Ireland under the
alternative

373

R. S. Tighe,
Esq.

(26 June.)

alternative of finding employment for its people, or diminishing its population by the gallows, or the sword, or transportation.

From the observations you have made, do you conceive there is a strong anxiety on the part of the people themselves to work?—Decidedly strong; I never remarked any feeling among any people more strong than the desire of the Irish labourer to get employment for himself and family, particularly during the winter season; and it is during that season, when the ordinary pursuits of agriculture are very inadequate and trifling, that the labour given by gentlemen becomes of great importance.

In the disturbances that have taken place in your knowledge, have they taken place at a time when employment was most deficient?—I have no hesitation in attributing all the excesses of the population of Ireland, generally speaking, to distress. It was my fate to assist upon the bench, to bring to trial and conviction and execution, a gang of persons similar, exactly, to those in operation in the south of Ireland; I heard, when the judge, Lord Norbury, was passing sentence upon them, one of them said, “we went eight miles, where we heard there was employment given,” which was the parish where I lived, “and if we could have got that, we would not have been here this day:” and I believe it.

Is this disposition manifested by their wish to be employed, even at very reduced wages indeed?—At any wages, I am perfectly convinced, if I was in Ireland, or any gentleman resident there at this period, I could get work done; and I know they have worked at very low wages; for the sum of money given by me to the London Committee was expended in labour; it was then at an infinitely lower rate than at any former period; those men were employed at 8 *d.* per day.

What is the usual price of labour?—The price of labour varies in the same districts, some more and some less; I gave 1 *s.* in the summer, and 10 *d.* in the border; I conceive that 10 *d.* the year round, or 9½ *d.* might be taken as the average.

Is that 10 *d.* or 9½ *d.* a money remuneration for labour, or an allowance in account, either for rent or articles supplied?—It is calculated in some cases; it is a money remuneration entirely for labour, if the labourers do not reside upon your ground and pay you rent; but in other cases, as a matter of convenience to both parties, a certain portion is retained for their rent, and for the grass of their cow, and whatever surplus comes to them is paid in money; I directed my steward always to settle with them in money, not to consider them as tenants, and call upon them for the rent at the rent-day, but in many instances they did not wish it.

Do you conceive the system of the payment of wages by allowance, in account, is as advantageous to the person employed and the person employing, as a money remuneration?—I think it is, in a great degree; at this moment it is in a very great degree founded upon the necessity of the case.

Do you think it is equally advantageous?—I would wish to see Ireland in a situation to get, what I do not think it is possible to get, a circulating medium to that extent. I think many labourers would remain unemployed entirely, if they did not take it out in potatoes or oatmeal.

Do you think the labour given as payment in account is as willingly given, as when labour is given for money?—Speaking from my own observation, I think, those who paid me the rent of their houses and gardens, worked as much to my satisfaction as any other labourers.

Have you ever employed labourers in task-work?—Yes, whenever it could be done; they are very desirous of it.

Is not that disadvantageous to both?—I think it is.

But it is a system of convenience?—Yes, and it is a system of all new countries; they must barter.

Have you had any opportunities of judging of the system of charitable loans, in Ireland?—I have had. I took an active part in the establishment of a charitable loan, in a village near me; the report of it may be seen in the early volume of the Reports of the Committee for bettering the Condition of the Poor in Ireland.

What was the result of your observation, in regard to that system?—It was most satisfactory: I have no doubt of the benefit of it, and I had the very high gratification of perceiving the honesty and punctuality with which the money was repaid; but it requires a great deal of detail, which a person, not always resident, cannot pay.

Do you conceive there is a double advantage in that system, the one as supplying capital, the other, as inducing habits of punctuality?—Indisputably I think there

R. S. Tighe,
Esq.

(26 June.)

is every advantage in it. I appropriated the interest of that particular loan, after certain deductions, to form a fund for small pensions, for the widows of labourers resident upon the estate, and I found a very great anxiety and desire upon that account; in short, I have a very high opinion of the peasantry of the country, in every respect; I think they might be made any thing of.

Do you think any system of gratuitous relief would be productive of benefit in Ireland, if generally acted upon?—I should think it would not; I should deprecate every thing not combined with labour and exertions of their own; I think measures should be devised, by combining the labour of the individuals with the benefit of society, which might secure the labourers of Ireland from much of the distress that now exists.

Can you suggest any measures which you think likely to produce those consequences?—I conceive that the basis of every thing that is done for Ireland, as well as the foundation of all that is bad in Ireland, is the want of capital. That the basis of any measure must be to make pecuniary assistance go hand in hand with any thing attempted. Under that view, I think friendly societies, under certain regulations, and with certain advantages, might be adopted with very good and beneficial effects for the benefit of the peasantry of Ireland, and general good of the country; but to detail any particular plan, must grow out of circumstances.

Do you conceive that additional capital might be advantageously invested at the present moment in Ireland?—I have no doubt of it. I mentioned, that the gentlemen in my district had associated to employ labourers, in July, August and September 1817, and I am satisfied it answered very well; they were employed in sinking rivers that divided particular estates, and was productive of benefit.

Are there any circumstances in Ireland that prevent the natural extension of capital to that country, if it could be employed to advantage?—While I witness a most unbounded disposition of kindness towards Ireland, I witness a very general indisposition to send capital over there.

Have you formed any notion on the subject of the disinclination of the English capitalists to send it over there, if it could be invested with advantage to themselves?—I see no reason for it; I speak as an Irishman; I think money is recovered as easily in Ireland as in this country, under particular circumstances; and I think it might be invested with very great advantage in Ireland, in various ways, but that depends upon the feelings of those who are to lend.

Do you consider the disturbed state of Ireland to operate as a bar against the investment of capital there?—Yes, a very natural and legitimate bar, I think.

Having stated that you conceived there are no greater difficulties in Ireland as to the recovery of debts than there exist in this country, you are aware of the mode of executing the civil process by the sheriff's there?—I am aware of the mode by which the debts that affect the greater part of the population of Ireland are recovered before the assistant barrister. A few years ago, a magistrate could order payment of any debt that was consigned into a note of hand, to a certain extent; that was taken away from the ordinary magistrates of the country, and vested in the assistant barrister's court, to a limited extent; they are liable to be proved.

Those debts that are recovered by civil bill before the assistant barrister are, generally speaking, small debts?—Yes.

Are you aware whether, in the recovery of those debts, the usual means are not taken, of granting specialties by the sheriffs to the parties entitled to recover?—In every part of the country the money, to the amount of which the assistant barrister could decree, was easily recovered.

Is it recovered by the sheriff in person, or does he grant a specialty to another person?—He grants the specialty.

In the event of larger debts which are endeavoured to be recovered after judgment in the superior courts, are you aware whether specialties are granted with equal facilities?—I believe not; but I am not aware of the detail. I should say, upon my recollection, that I do not know any thing in which there has been so great improvement as in the facility of recovering debts, I mean debts of a larger description, that affect the gentry of the country; there is a facility in recovering debts of that description that did not exist at former periods.

Are you able to state to the Committee whether specialties are granted in like manner as to the gentry of the country as to the persons who owe small debts?—I never heard of it.

By

R. S. Tighe,
Esq.

(26 June.)

By specialty is meant a writ granted by the sheriff to any person to make the caption?—I do not know that that exists in my part of the country.

Have you any doubt that the duty of the sheriff and sub-sheriff is performed in a very different manner from what it ought to be?—No doubt of it.

After settling for the rent and so on, where labour is paid by allowance in rent, is a balance paid by the master to the labourer, or a balance paid by the labourer to the master?—If a labourer pays the balance, I should consider it a proof that the man was in a more prosperous state: he has no balance to pay in any case I know of, from any obligation or any right; but he may have dealings with his employer, he may be enabled to buy things from his employer, and have a balance to pay; but in the ordinary settling of accounts I should think that the employer must have money to pay to the labourer; I apprehend frequently the labourers are in debt, but I apprehend their wages generally come to more than the rent.

Are your labourers generally freeholders?—The greater part of them are.

To what amount did you extend your charitable loan?—The amount of the sum was 150*l.*; it was limited to that sum: 5*l.* was the highest sum, and of course it was limited to persons over whom I could have an influence that might tend to secure the better punctuality of payment. No money was lent without a person joining in the security; and I have uniformly found that the Irish peasantry were particularly anxious to discharge their debts when they had a friend bound for them.

You are friendly to charitable loans: to what extent do you think they ought to go at the present moment; should they go so far as to employ all the people out of work?—The charitable loan I allude to was never given except for some purpose that bore on the face of it that prospect of profit that would enable him to pay it: if a man could show that he wanted food, and had a pig, and if he had a wife and daughters, who could spin, but wanted yarn, it was lent; but it was not lent to pay rent.

If government resolved to lend money, should they do it by lending it directly to the gentlemen of the country on their security, or should they advance it, upon their opinion, to the labouring classes?—It would be quite impossible to put government in contact with all the labouring population. I should think the government should advance money, and that it is an indispensable and dreadful necessity to advance money to save the country from the horrors it is in; it ought to be lent to the country gentlemen in the country, who would give security for it at a moderate interest, with an undertaking that the money should be circulated in the country in labour. In the year 1817 the government advanced 200,000*l.*; I then made, on the part of some other gentlemen in my neighbourhood, an application to the board in Dublin to get some of the money: we offered to give security; the answer was, that it must be expended in public works. The gentlemen of the neighbourhood did not go to the extent of borrowing money to be laid out on public works; but if they had been allowed to expend the money in some improvements to their tenants or themselves, they would have borrowed it at that period, and made exertions from their own means to repay it.

Were there not great difficulties also arising out of the provisions of the act of parliament, and difficulties made by the commissioners, as to the securities they would accept?—I do not know; I am not prepared to speak as to that: the security was unexceptionable that was offered in that instance.

What rate of interest do you think it advisable for government to charge?—I should think it ought not to exceed four per cent; the government ought to have indisputable security for it, and they ought to take measures to ascertain it was expended in labour.

Do you think the Irish are greatly indebted to the English for money lent on mortgage?—Not so much as they would wish to be; that is my opinion; but as to the extent of it, I cannot speak.

If money was advanced by government, or private individuals, in the way of a loan, would the gentlemen of the country be security?—I have no difficulty in saying, that if money were advanced to me, to be expended as I should think proper, I would become security.

Then it is your opinion, that the gentlemen would be security for money advanced by the government, or private individuals?—Yes, if it was at their disposal.

Then it is your opinion, that the security would only be given where the money was laid out at the discretion of the individual who gave the security?—Exactly so.

What security would government have that this money was employed in the way of labour, and not in payment of any former debt contracted at a higher rate of interest?—

R. S. Tighe,
Esq.

(26 June.)

interest?—I can only speak with respect to the counties I am best acquainted with. There is a body of resident gentry in those counties from whom, I have not the least doubt in the world, commissioners might be taken, who would give the government any description of security they could give, and that care would be taken to guard against that. If I was one of the commissioners, I should require from every person seeking a loan, to state the manner and place in which he meant to expend it; and he should give the same sort of proof as is now required in accounting for monies expended before grand juries.

Would it not be necessary for the gentlemen to be of legal habits to know whether the estates were free from incumbrance?—If government in lending the money required the investigation of all titles and incumbrances of the estates, the very expense would prevent any one attempting it; but whatever is done must be done under the impression that the present state of Ireland is entirely novel; if that be the fact, and I do here in the face of this Committee pledge myself to the truth of the opinion, it is at this moment a fact, and has been so for some years, you are reduced to the alternative of either finding employment for the people, or sending them to the gallows, putting them to the sword, or disposing of them by transportation; if that is admitted to be the fact, you must legislate in a novel mode: for advances you must have the best and most substantial security you can obtain, and I know you can obtain it. I am sure of the benefit of the measure, and every point of which, either with reference to humanity, or duty to the suffering part of the country, or with regard to the rest of the empire, it would be very beneficial.

At what time do you think this money could be repaid, without involving Ireland in the same distress in which it is now for the want of this money?—It is almost impossible for any one now to give an answer to that; if I was going to borrow money, I should communicate with my farmers and my tenants, and endeavour to form as accurate a calculation as I could, of the return that that money would make; and I should like to apportion the period of the payment to the period when that benefit might come into operation, but it would be liable to change every day.

Do you not see that it might be quite in your power to repay this money after a certain number of years, without inconvenience to yourself, but that the people employed by means of this money might be plunged in the greatest difficulties by the loan being repaid?—They would not have to pay any part of it.

But they would have no employment when that was withdrawn?—That is another view of it; you must proceed at first upon the view of the necessity of immediate temporary relief, and it ought, when properly applied, to produce means of repayment.

Do you conceive that the gentlemen of your country have any security but landed security for the advance of money?—There are a great number of gentlemen in those counties to whom I should have no hesitation in advancing money upon their personal securities.

You do not propose that government should do that?—No.

Are you not aware that the landed security is depreciated in value very much in the last few years?—Very much.

Are there many estates in your part of Ireland not incumbered with mortgages?—Very few.

Do you think the nature of the property in Ireland is such, that individuals could give to government security satisfactory to the state?—As I have not the honour to be one of the government or a legislator, but sit here to be examined as a witness, I cannot say the principle upon which they would decide: my opinion is, that the condition of Ireland is such, that it would be better to give the money than not to lend it upon such security as they can give.

You having stated, in the event of the application of any fund, you would suggest that this fund should be accounted for in the same way that grand jury presentments are now accounted for; do you consider that mode of account to be effectual for the purposes for which it was intended?—I think it has been very much improved by the various measures of the legislature; it is impossible for me to say it may not be improved by many other means, but the grand jury presentment, in those counties that have come within my knowledge, and in both of which I have been in a great degree, I do believe they are honestly accounted for, and as productive of as much benefit to the persons who have paid the money, as any other public money expended in the country; that there are abuses in the country there is no doubt, but taking it all in all, it does appear to me to be a system beneficial to the country;

country ; I suggested it as the best mode that does at this moment occur to me for accounting for any money that is advanced.

R. S. Tighe,
Esq.

Are you not aware there were great abuses in the expenditure of the money granted last year?—I am not conversant with that, it did not come under the grand jury ; I have heard there was, but there were no public works carried on in my counties that led me to inquire into that.

(26 June.)

Veneris, 27^o die Junii, 1823.

JAMES GRATTAN, ESQ. IN THE CHAIR.

Robert Sterne Tighe, Esq. called in ; and further Examined.

(27 June.)

ARE you acquainted at all with the linen trade of Ireland?—I have the honour to be one of the trustees of the manufacture, and I am, to a great degree, acquainted with it in my own neighbourhood ; I have attended to it particularly, but I am not competent to give any information with respect to it : in my part of the country, it is principally confined to spinning of yarn ; there is very little weaving in that part of the country.

Have you considered any means of extending the linen manufacture throughout Ireland?—I have always found that the only way of extending it by any encouragement, except that of good prices (which, when the prices were good, was quite sufficient), is by giving employment to the poor women ; I have distributed a great number of wheels and reels, and there is great avidity to receive them, and I know that they are made use of, and that it forms a very essential part of the means of the peasantry of the country to pay their rent ; the women, in many families, spin more than the whole amount of the rent of the house and garden, and indeed every thing that can aid or can tend to promote the industry and employment of the people of that country, is a great desideratum.

You are a trustee of the Linen Board?—Yes, I am.

Can you state to the Committee any particulars respecting the principle on which they act?—Their duty is to have a general superintendence over the manufacture at large ; all complaints are referred to them, and they revise the accounts ; from the manner in which the body is constituted, of course they cannot enter much into the detail of the manufacture, but I believe they generally pay a proper attention to the expenditure, and to the general costs of the manufacture ; it seems to me that they do so ; a body consisting of seventy-two noblemen and country gentlemen, who are not bound to any attendance, cannot be a very efficient body for the purposes of the detail of the manufacture ; but I conceive that they are of great use to the manufacture from their rank and station in the country, and the kind of encouragement that is given from that circumstance.

Would it not be an improvement if they were bound to attend at stated periods?—I should think it would be a great improvement to the system, if a greater number of them were to attend at all times : they have a most excellent officer in their secretary Mr. Corry, who attends to, and is intrusted with all the details of the business.

You are not aware of any neglect of duty on the part of the trustees?—I am not ; the only mode that I could suggest, I do not conceive it can be within the competency of any body to give large prices for a commodity ; all that can be done, and certainly the more that is done the better ; the more the implements and materials are furnished to the women of the country, the more it is likely to be useful to them ; it is a very essential part of the industry of the peasant's family in the part of the country where it does prevail, and where they are assisted with wheels and reels, or with the means of buying flax, they seem to come under the department of charitable loans. The trustees distribute a great number of implements every year, that have been productive of very great benefit ; they are very eagerly sought after, and I believe in most cases are properly used.

How are they distributed?—The individual trustees distribute them as they think proper.

Not upon application to the board, but as they think proper?—The board has the power, of course, independently of the grant to the trustees, to distribute, upon application, out of their funds ; and they do receive applications, and attend to those

R. S. Tighe,
Esq.

(27 June.)

applications; but a certain number of wheels, amounting at an average to sixty or perhaps seventy wheels, with a certain proportion of reels, in the year are given to each trustee; they distribute them in their neighbourhood, either to the schools or to the industrious poor, according as circumstances may appear to require. One of the great causes of suffering to the peasantry in the part of the country with which I am acquainted, was owing to the sudden fall in the price of yarn. I have known the little farmers who are classed with the peasantry in town-land, as it is called, have lying by them as much as would have paid near half-a-year's rent, for which they could get no market.

Then it is owing to the want of market?—Certainly, the want of market is the cause of the distress in that respect, for they are perfectly willing and desirous of earning as much as possible by spinning, and there is no want of industry, if they had the means of selling; during the time I have been trustee, I have had the distribution of some hundreds of wheels, and I have taken particular pains to ascertain what use has been made of them, and the instances are very few in which I have found that they have been misapplied; that is, in which I have found that they had sold them or made away with them, as far as reached my own observation. I have always made my steward inspect at different times, and inquire at different times, whether they were possessed of wheels; in short, I have uniformly found, in my experience, which has now been for twenty years, since the period of the Union, I have been long absent from Ireland, before that I believe I had been as much in contact with the peasantry of the country as any private gentleman in it; and I have uniformly found an anxious desire and disposition to earn the means of livelihood, both in the males and females, when it was put in their power to do so; and I have uniformly found, with very few exceptions, that whenever there has been a disposition to outrage or tumult or discontent, it was always to be traced to a want of employment of the people.

Has your part of the country been disturbed?—My part of the country has been considerably disturbed since the distress began, but by very prompt and fortunate circumstances, that enabled the magistrates to give effect to their exertions, they were enabled to put a stop to it by bringing to punishment a very large gang at once; but within the last three or four years, till last year, there have been symptoms of disturbance, and plunder and pillage, but not to the extent, not at all to be compared to what has existed in the south.

You attribute it exclusively to the want of employment?—I do attribute it entirely and exclusively to the want of employment, and I do think it is impossible not to consider it as the natural result of the want of employment; and my own opinion is, that if a committee of this description had sat four years ago, many lives would have been saved, and much misery and injury spared to the country.

By what means?—By inquiring into the state of the peasantry of the country, and by endeavouring to furnish the means of employment.

By means of furnishing money?—Of course, there can be no other mode by which immediate relief can be applied; I do not say, and I believe, my own opinion is, that it may work its remedy in time, but it will work its remedy through the dreadful experiment of the loss of thousands of lives, and with no individual that has any thing to lose, and who cannot afford to garrison his house, ever going to bed at night without the fear of being robbed and plundered; that is the price you must pay for saving the application of money in the first instance. I have no doubt that time will afford a remedy, but the evil is the urgency of the remedy, and nothing but the application of money, well applied under the wisdom of parliament, as they may think proper, can possibly save the lives of thousands of the wretched creatures of that country, or can give security to the peaceable inhabitants of it.

If government were to advance a sum of money, would the greater part of it, in your opinion, be employed in encouraging the manufactures of Ireland, or in its agriculture?—I think both, if I am asked what is my opinion of the manner in which it ought to be employed.

What is your opinion of the proportions in which it would be employed in those two different occupations?—I should presume that would be according to the circumstances and wants of the population.

What is your opinion?—There is, comparatively speaking, very little or no manufacture in the three southern provinces of Ireland; any money that would be employed with effect to introduce any description of manufacture, would be of great use.

In

R. S. Tighe,
Esq.

(27 June.)

In point of fact, do you think it would be so employed?—In my part of the country, with the exception of the encouragement of spinning, it must be employed almost exclusively in assisting the agriculture of the country.

If there were a demand for a great additional quantity of linen, could it not be furnished without any advance of capital from government, provided the price was sufficiently high to afford remuneration to the manufacturers?—If the price was steadily high for any length of time, I have no doubt that it would; I conceive that one of the great evils of the present state of Ireland, has been the want of steadiness in the price of goods; they have varied immensely; and where it is so difficult to obtain any capital, however small, unless there is something like a prospect of a steady price, of course the efforts, or the success of those efforts to obtain that capital, will be less.

Do you know whether the present price of linen is a remunerating price to the manufacturer?—I am not acquainted with it.

Do you think that any advance of capital would have a tendency to raise the price of linen, or to lower it?—I think the Committee must be much more competent to answer that question: I suppose the advance of capital would certainly tend to produce the article, but as to the effect upon it as a system, with a view to a system of commerce, I cannot possibly give an opinion.

You have no doubt that the demand for the article would increase its price; that a great additional demand for linen would have a tendency to increase its price?—I must presume it would, I believe that is the general effect of increase of demand in all cases.

By increasing the supply without a demand, is it not probable that you would rather lower the price?—I should think so.

Do you attribute the peace and prosperity of those districts where the linen manufacture is established, to that manufacture, or to any other cause; such as the religion?—I attribute every superiority that characterizes the north of Ireland over the southern provinces to those improvements which have naturally followed the employment of the people; they have had sources and means of industry either furnished to them or acquired by themselves, and all their other improvements I consider to be the natural result of that.

May not the establishment of the manufacture be rather the effect of the education and better habits of the people?—I rather think that their improved habits are the result of the establishment of the manufacture; I do not think that if you were to bestow any education to-morrow upon the peasantry in many parts of the south of Ireland, that that would occasion the establishment of the manufacture.

Can you give the Committee any information as to the distribution of the funds that were sent over last year to your part of the country?—I can give no information with respect to any thing but that portion of the charitable loan of the London committee which was sent to my parish; I believe none of the government funds were sent to my part of the county at all.

Can you state how the charitable funds that went over were expended?—I had the honour of being a member of the committee at Bristol, and from what I collected from the correspondence that took place, and the declarations of persons themselves, it certainly was all expended in labour; and, in many instances, in conjunction with subscriptions on the spot; and part was given to myself, and I really believe it was the only sum that was sent to that part.

Then, in point of fact, not having been in Ireland, you are not sufficiently aware of the particular local expenditure?—Not at all; I am not acquainted with that part of the country: the Bristol fund was sent exclusively to the southern part, the counties of Connaught and Cork.

Upon the subject of the other public monies which are in the habit of being expended in your county, the sums raised by grand juries, can you give any information to the Committee?—I think I can.

Are you of opinion that the expenditure of the money raised upon the occupiers of the soil, is sufficiently checked and provided for by the present system of grand jury law?—Upon my word, as far as comes under my observation, at the same time not pledging myself to say, that there might not be some improvements in particular points that might grow out of the operations at the different assizes, I do think they are very well checked; the late improvements that have been made in the grand jury system have, I think, tended to remove many great objections that existed to the system.

R. S. Tighe,
Esq.

(27 June.)

Do you think that the necessity which is stated as the ground for works being undertaken and money expended, is now sufficiently ascertained?—Upon my word, I think, as far as the law goes, it is.

In point of practice is it?—Indeed, I think, speaking generally, it is; it must depend upon the description and character of the gentry that form the grand juries; but as far as I can judge of those grand juries that have come under my observation, I think the check is quite sufficient.

Have you served in any counties as grand juror, except Meath and Westmeath?—No, I never have.

Are the grand juries of those counties composed principally of gentlemen permanently resident?—In the county of Westmeath almost entirely so, and the proprietors of the soil in the county of Meath generally so; in both, I should say, that the composition of those two grand juries was quite unexceptionable.

What is the general grant in the county of Westmeath for the particular works in that county, exclusive of salaries of the public officers?—I think it is something about the average of 7 or 8,000 *l.* a year.

Have you a general recollection of what the applotment per acre is for that levy?—The applotment, per acre, in the county of Westmeath, has never, to my recollection, exceeded 12 *d.* or 14 *d.* for one assizes, and 8 *d.* or 10 *d.* for the other; but that includes all the local expenses of the county; it includes dispensaries, sessions houses and jails; I very much doubt whether it will be found in any part of the empire, that the same quantum of money produces the same effect.

Have you often known the money given for works which might have been spared; repairs of roads, and things of that sort?—Indisputably.

Have you often known of grants having been made for works deemed necessary, and perhaps necessary, but which works then had not been executed, or have been executed insufficiently?—I have never known money granted for works that have not been executed; they have been granted and the works have not been executed, but the money has not been received: the money cannot be received till the works are executed.

By law they cannot, but is it not so in practice?—There might have been, and I believe there have been instances; but I am sure that there were no instances of a recent date.

Are not you of opinion, that the grand jury in your county, and the administration of the law in your county, in those respects, is much better than it is in any other county in Ireland?—I am of opinion that it is, without meaning to pass any censure on any other.

Is the system of accounting sufficiently strict, in your opinion?—I should say that it is; at the same time that I do believe that it is liable to abuses; I believe all systems of accounts are; I believe there are as many checks existing to the grand jury system as have been ever devised for any other system.

Can you inform the Committee whether the persons employed in the execution of works, for which public money has been granted by grand juries in Ireland, are in general paid by daily wages, or whether they are the tenants of individuals who obtain the presentments, and whether their labour is a matter of account between them and their employers?—I cannot speak generally; I have always made it a rule, and I think many other gentlemen have done the same, to employ the persons resident on the lands through which the roads run.

Who, of course, receive their daily hire?—Yes; but if I am asked whether it is not frequently the practice for persons to get presentments, and to employ their tenants on the works, and then to take the amount of that presentment as matter of account between their tenantry and them; I believe that exists in many instances.

Do the magistrates, at the sessions which precede presentments, take much pains in investigating the necessity of the works of which notification is given?—The Committee will observe that the law had been enforced for a short time before I left Ireland. At the sessions where I attended, I observed that there was very great attention paid, and I believe that, generally speaking, in those counties with which I am acquainted there is; but that must depend upon the composition of the sessions, and it must vary according to the respectability of their character.

Is there in the county of Meath a deficiency of resident magistrates qualified to perform the duties at those antecedent sessions?—No, I do not think there is a deficiency; I think there is ample sufficiency of magistrates to perform the duties.

Sir James Anderson, Bart. called in ; and Examined.

WHERE do you reside ?—At Buttevant, in the county of Cork, almost the centre of the disturbances.

Sir J. Anderson,
Bart.

(27 June.)

Can you give the Committee any information as to the general state of the south of Ireland, and particularly that part in which you reside ?—The distress is very great, and has been since 1817, but has considerably increased for the last two years.

Can you inform the Committee as to the cause of this distress ?—Generally, the non-employment of the people.

Have you found also great disposition for employment ; have applications for employment been very numerous ?—The greatest anxiety to obtain work.

Can you inform the Committee as to the price of labour and of provisions in that part of the country ?—The average price of labour is about 6*d.* a day, and provisions were so low this season as to be sold for 1½*d.* for twenty-one pounds weight of potatoes.

Can you inform the Committee as to what you consider the most advantageous mode of employing the poor ?—I consider the south of Ireland principally an agricultural country ; the working classes are employed in tilling the land, and any mode that could facilitate the farmer in taking his produce to market would be of essential benefit : I would, therefore, suggest that the cutting canals through different districts would afford employment to the people, and ultimately the money would be repaid by a toll on the canal.

Is there much manufacture in your part of the country ?—Very little.

Is there any ?—They have commenced the linen manufacture.

What are the articles that you think would make it worth while to cut extensive canals ?—The produce of the soil ; the carrying limestone, coal, timber and iron. Fuel is very scarce in the county of Cork.

Is it fuel for the use of the population that you mean ?—Certainly ; we have no manufacture.

Do you think that the situation of the population of that part of the country is such that they would purchase fuel brought by canal ?—Yes.

What fuel ?—Coals from Wales. The Committee can have no idea of the misery, unless they had witnessed the distress occasioned by the want of fuel in winter.

Can you inform the Committee whether any collieries exist in the south ?—There are some.

Are they of very considerable extent ?—They are not worked to any considerable extent, because there is not capital sufficient to work them.

Have not they latterly worked some collieries in the south of Ireland ?—Yes ; Mr. Leader has worked some.

Where is it ?—About six miles from the town of Mallow.

How has it been worked ?—I believe government advanced money to Mr. Leader to enable him to employ the poor.

If a canal were undertaken by funds of private people, do you think it could be made a profitable concern ?—I think the individual would be a long time out of the principal of his money, and perhaps, ultimately, he might be repaid.

Is there not an unfinished canal in the part of the country that you speak of ?—Yes ; there was a canal commenced at Mallow : I believe the intention was to have taken it down to Youghal ; but it was of no use, it having been commenced at the wrong end.

Has not that generally been the case with canals in Ireland ?—No, it has not.

Are not you aware that the canals that have been executed in Ireland have been obliged to be taken up by the public, in consequence of their not defraying the expense which was incurred in their construction ?—If the question refers to the two leading canals, the reason is, that they have not defrayed the expense ; that they run parallel to each other, and that there is not sufficient work for two canals so near each other ; there was too great an expense incurred in the first instance, both of the canals alluded to having been cut much wider than was necessary.

Is this coal used by the people of the country ?—It is used immediately round the collieries.

What are the articles that are at present conveyed by those parallel canals ?—Merchandise of every description, corn and turf.

What is the quality of this coal ?—I am not a miner.

Have you ever used the coal ?—No, I have never used it, except for burning lime.

Sir J. Anderson,
Bart.

(27 June.)

Are you aware whether it is coal for private use, or for distillery?—It is used in some private houses, I believe; it is very like the Kilkenny coal.

Could it be raised at a cheap rate of expense?—I cannot speak from my own knowledge.

Can you state the general price of coal imported into Cork from Wales, or from the north of England?—Last season we got coal at 22 s. per ton.

Do you think that the agricultural population of the county of Cork, if canals were made for its conveyance, would, under any circumstances that you contemplate, be able to consume coals at that price?—I think they might; the scarcity of fuel is so very great, that if they had the means at all, they would purchase it; it is such a necessary of life, that it cannot be done without.

What is the general rate of wages in the parts of Ireland to which your evidence applies?—Sixpence.

Is that a monied price, or is it, generally speaking, an allowance in account?—I think, generally speaking, it is an allowance in account; but there are some labourers paid in money, but not many.

At present, do you conceive that in the great majority of cases, that payment for labour is allowed on account?—I do.

Will you explain to the Committee the system which prevails, with regard to that account?—There is a charge made for the potatoe garden of the labourer, for the grass of his cow, and for his house; and then, on the other side of the account, the number of days he works is put to his credit.

Is that a system which you conceive satisfactory to the labourer?—In the present state of Ireland, I do not think that any other system could be adopted.

If it were possible to adopt a money system of payment, do you conceive that that would be more satisfactory to the labourer?—I do.

Why do you think that could not be adopted now?—From the want of money.

On the part of the employer?—On the part of the employer. If the system of account was not adopted, the few people who are employed could not obtain work. I am speaking of the country, not the towns.

Will you state whether a money payment is adopted, generally speaking, in the payment of presentment work, whether the individual working in the repair or making of a road, under the authority of grand juries, is, generally speaking, paid for his labour in money, or paid for his labour by any allowance for rent?—I believe it is mostly paid by allowance for rent, though in some instances not.

In the cases of presentments, is there not a payment of money by the treasurer to the individual entitled to the presentment?—Such is uniformly the case.

Do you perceive any difficulty in introducing and enforcing strictly a money payment for wages, in cases of execution of public works?—I do not see any difficulty. It would be highly desirable.

Have you any doubt that public works would, in that case, be more cheaply and better executed?—If a money account was introduced, I think the works would be better executed.

Do you not conceive that they would be executed at a cheaper rate?—I do, if it was done by contract.

Have you any doubt that a greater quantity of labour would be given for 1 s. money payment, than for 1 s. in account?—Certainly, a greater quantity of labour for 1 s. of ready money.

Will you state why?—Because, I have uniformly found in Ireland, that when work is done by task, you get more for your money than you do by daily labour, which is mostly paid for in account.

Do you not conceive that work done by task is also more beneficial to the character of the peasants, by giving a reward exactly proportionate to his industry?—Certainly I do.

Do you conceive that task-work would be incompatible with the system of paying labourers by allowance in account?—It has uniformly been paid in our county by money, and on that account an individual performs more labour than he would when paid in account.

But if a man, paying in account, requires task-work, could he not make the account so as to effect his object?—He could.

Do you see any difficulty in it?—No; I do not.

But the custom of the country has been, in cases of payment of labour in account, that that labour should be computed by so many day's work?—It is.

Does

Sir J. Anderson,
Bart.

(27 June.)

Does this same system of barter, and not money payment, apply to labour of horses and the use of agricultural implements?—It does.

Have you known instances of dissatisfaction on the part of the peasantry themselves, arising out of this account system?—No; I cannot speak from my own knowledge, though I have heard that there have been complaints.

Have you never heard of the people remaining unpaid, who have executed the work, while the person to whom the presentment has been given has received the money from the treasurer?—I have.

Has it often come within your knowledge?—No; I have heard it from report.

Is there, or not, an anxiety on the part of the people to obtain employment?—The greatest anxiety.

Is this manifested by a disposition on the part of the people to work at very reduced wages indeed?—I am perfectly confident, that where I reside I could get five hundred individuals to work at 4*d.* per day, and be very glad to undertake any work.

In the execution of task-work, have you known any instances in which the anxiety of people for employment was evinced so far as to lead them to exertions beyond their strength?—Many.

Are they as much unemployed now as they were last year?—Fully as much, for the same reason; there is little or no money in the country.

How many hours would they work for 4*d.* a day?—Ten.

Have you known instances in which individuals have gone very great distances in search of work?—Yes; I have known them come six or seven miles.

Do you conceive that this want of employment produces any portion, and what portion, of the present disturbances in the south?—It is my opinion, that if the people were employed you would have no disturbance.

Have you any doubt on that subject?—None whatsoever.

Are there any considerable alterations now taking place in those parts of Ireland with which you are acquainted, in the system of letting farms, alteration of tenantcies, and consolidation of small farms into large ones?—Where farms become out of lease, it is the interest of the landlord to let them in larger tracts than he did formerly.

Is that a principle which is generally admitted, and generally acted upon, when lands come out of lease?—I consider it is.

Is not one of the consequences of that system, a diminution of the population and the number of houses on those farms?—It must certainly be the case.

Can you inform the Committee what course is generally taken by the inhabitants of those farms, who are thus deprived of their habitations and of their former modes of subsistence?—The disturbances of the country, perhaps, may be ascribed to that reason.

Have they any difficulty in procuring habitations elsewhere?—The habitation of an Irish peasant is so simple in its construction, that the difficulty is obviated in a great degree; the peasant can build a house in a very short period, the cabin consists of a mud wall, roofed with a few sticks, covered with straw.

Does not the same objection apply to one farm as to another; if there has been a principle of consolidating many small farms in one parish into one, must there not be an indisposition to create a small tenancy in the neighbouring farms?—I think those who have a regard to their interests will not let their lands in small tenantcies, but it is done principally for the sake of obtaining parliamentary influence.

Then in the parts of Ireland with which you are acquainted, there is a proportion of the population who are now deprived of the ordinary modes of subsistence, and forced to search for new habitations?—Yes.

Do you conceive that principle likely to be more extensively acted upon?—I do.

Do you not conceive that increased danger to society and to the state must result to the extension of that principle?—If the people are not employed greater danger must be the result.

Is there any other remedy besides the employment of the people at home, which has suggested itself to your mind?—I am no advocate for emigration; it is desirable to keep the people at home, if you can employ them.

Are there considerable tracts of mountain or bog in the parts of Ireland with which you are acquainted?—We have many mountainous tracts in the south of Ireland.

Do you conceive, that if encouragement could be given for the tenants of the farms to which you have alluded, when deprived of their former holdings, to settle

and

Sir J. Anderson,
Bart.

(27 June.)

and acquire permanent farms in those mountain and bog districts, that any other considerable portion of the evil to which you have alluded could be obviated?—If they had the means they would certainly be induced to settle on the uncultivated districts.

Are there any difficulties arising out of the present state of the law of Ireland, which impede the inclosure and improvement of those bog and mountain districts?—I cannot speak of my own knowledge.

Are you acquainted with the provisions of the law of Ireland, and General Inclosure Acts in this country?—No, I am not.

How are the peasantry clothed in those parts of Ireland with which you are acquainted, by domestic manufacture or from foreign importation?—Principally by domestic manufacture; in the towns they are generally clothed in old clothes, imported from London, but in the interior it is principally domestic manufacture, called freize; and allow me to say, that I never knew the lower class so badly clothed as they are at present, for they are almost naked.

Has there not been an improvement within the last fifteen years in their clothing?—I think a decided falling off, within the last five years. During the war they were much better clothed.

The freizes with which they are clothed, are produced from wool, and spun by the females of the country, and woven by weavers, and tacked in mills in the country?—They are.

Then are the Committee to understand, that a considerable proportion of the population of those counties are acquainted with the process used in those separate stages of the manufacture?—Almost all the lower orders make their own clothes.

Are the women also acquainted with flax spinning?—Not generally, in the south.

Can you inform the Committee whether there is any sufficient supply of implements for flax spinning amongst the female peasantry of the south?—The supply is very deficient.

Is there any anxiety on the part of the female peasantry themselves, to become possessed of such implements?—The greatest anxiety.

Have you ever known that anxiety proved, by hiring those implements, or borrowing them?—Yes; they generally pay 1s. a week for a wheel.

What is the price of a wheel, for the hire of which they pay 1s. a week?—About 8s.

Is flax extensively cultivated in that part of the country?—Not extensively, it is grown in small patches by the peasantry.

In what state is it brought to market; is it properly cleaned, and properly assorted, and brought to market in a way that proves satisfactory to buyers?—In that part of the country in which I reside, we have no market except Charleville; I believe it could be very greatly improved; the flax is not sufficiently cleaned.

Have you any doubt, that either by legislative enactments, or by instruction amongst the peasantry, if flax could be brought to market in a cleaner and better state, that the sale of flax, and consequently its growth, might be augmented very considerably?—The trade might be augmented very considerably, and very beneficially to the grower.

Having mentioned that the houses of the peasantry are very wretched and miserable, will you have the kindness to tell the Committee whether there is any deficiency at present in the country of timber, for the roofing of those houses?—The roofing is so simple, that almost any timber answers.

Does the timber constitute a very considerable portion of expense?—The principal expense.

What timber is that, generally speaking?—It is generally home grown.

Is it not necessary for the peasant, in many cases, to go very considerable distances, and to pay, what is to him a very considerable sum, for the timber for the roof of his cottage?—Yes.

Do you consider that a reduction in the price of foreign timber, which would bring it more within the reach of the peasantry themselves, would have a beneficial effect?—Certainly, it would be productive of good.

Do they purchase much timber?—They purchase no foreign timber.

Under the present state of the law, if a tenant builds an improved house upon his farm, and his tenancy expires, has he, generally speaking, any allowance made to him by the landlord to whom the ground reverts?—I am not aware that there is any law to force a landlord to make that allowance.

Does

Does the whole expense of repairs and building upon Irish farms, generally speaking, fall upon the tenant or upon the landlord?—Generally on the tenant; there are some exceptions.

Sir J. Anderson,
Bart.

(27 June.)

Do you conceive that any alteration of the law, which would entitle the tenant to a reasonable allowance for sums which he may have expended in repairs or improvements, would be beneficial?—It would be beneficial to the tenant.

Would it not be an encouragement to his exertion and industry?—Certainly it would.

Do you think the landlord receives much rent now in the south of Ireland?—Very little; in many cases none.

Do you not conceive that every effort that can be made to enable the peasantry of Ireland to procure better habitations, would have a tendency to check the increase of population in that country?—I think it would.

Do you, or do you not, conceive that the low diet on which the people live, and the facility they have in building houses, form prominently the causes of the increased population in that country?—I think the early marriages are one great cause.

What do you conceive to lead to those early marriages among the peasantry?—The facility of getting houses, and the cheapness of provisions.

Do you not think that they are encouraged by other causes?—Yes.

Have not landlords encouraged the increase of population with a view to extending their elective interest?—Yes.

Is that the case in many parts of Ireland?—It is.

What other causes do you think contribute?—The Roman Catholic priests are paid by marriages, it is, I believe, a principal part of their stipend; marriages and christenings.

Can you state to the Committee whether there are, in that part of the country to which you allude, many resident gentry?—There are several resident gentry, but there is a great deal of property belonging to absentees.

Do you not think a great evil arises from that?—No doubt, one of the greatest evils.

Are you acquainted with the neighbourhood of Donneraille?—Yes.

Has not that neighbourhood been of late considerably disturbed?—For the last eighteen months it has been in a state of rebellion.

Is that, or is it not, a well inhabited part of the country?—Very thickly inhabited.

How far is that from you?—Three miles.

Are the outrages chiefly supposed to be committed by the immediate inhabitants of that district?—The disturbances commenced on the Courtenay estate, the estate of an absentee, and extended from that property to the neighbouring properties.

Where there were resident gentry?—Yes.

Can you give the Committee any information with regard to the state of the landed gentry, of the better part of farmers?—They receive little or no rent, and they are very deeply in debt.

Are they in such a state of distress as to diminish very considerably, if not wholly to extinguish their means of giving employment to the poor?—Almost wholly.

Have you known any specific instances in which, by reason of the fall of rents, the gentlemen of the country have been obliged to discharge the agricultural labourers whom they were accustomed to employ?—I have.

More than one?—Many.

Has there been any abatement of rent within the last five years in Ireland?—Very great.

How much?—Amounting in some cases to one-third, and in some instances as much as half.

Is there any imposition practised by the employer on those whom he employs, in consequence of his paying wages by setting them off in account, rather than paying them in money?—I should hope not.

In what way then is it disadvantageous to the labourer to receive his wages in the way of setting-off?—If he received his wages in money, he would have the disposal of it in whatever way he thought fit.

But as in all cases he must pay his rent, is it any inconvenience to him that he should set that against any other sum that is due to him?—Not so far as affects rent.

Sir J. Anderson,
Bart.

(27 June.)

As it affects any other money payment which he is obliged to make, is it any disadvantage to him?—I think it would be a satisfaction to him to have the disposal of his own money.

Do you see any real advantage in his receiving his wages in money?—I think that if he got his wages in money, he might make a better use of it.

Do you conceive it would be a greater spur to his industry?—Yes, I consider it would be a great stimulus.

Inasmuch as he must pay a part of those money wages back to his employer for rent and other objects, would it make the slightest difference to him?—None, except the pleasure of laying out his own money.

In consequence of consolidating many small farms into one large one, have not the proprietors or occupiers of the large farms, increased means of employing the people?—It was with that object they have been consolidated; it was in the hope of getting a better description of tenantry.

Will a greater number of people actually be employed on a farm, which is consolidated from many small ones, than would have been employed on those different small ones, if they had been left in a separate state?—The small farms were not sufficiently large to give employment, I therefore think, that if they are consolidated under one individual, adopting a better system of husbandry, that a greater number will be employed.

You were understood to say in a former part of your evidence, that the distress of the people arose partly from several small farms being consolidated into one large one; how do you reconcile that answer with the answer you have just given, in which you say, that a larger number of people would be actually employed on the consolidated farms?—Provided the individual who took the consolidated farm has sufficient capital; but it does not always follow that that is the case.

Would he not have a capital as large as the aggregate of the capitals of the various small holders?—That depends upon circumstances.

In fact, can farmers with capital such as you allude to, be found generally in Ireland?—No.

Then do you think it is a necessary consequence of consolidating many small farms into one large one, that that should throw people out of employment?—I do, owing to the want of capital.

If there be want of capital, will it be the interest of the landlord to allow of this consolidation?—If it was not his interest, I suppose he would not adopt it.

Wherever he does adopt it, it is not of advantage to him?—I suppose he considers it so.

In that case, will not that farm support a larger number of people than formerly?—I think not.

During the progress of the war, was there not a very great extension of the tillage system?—Very great.

Was not that extension of the tillage system carried on very much through the agency of those small cottages?—Almost entirely.

When a farm is consolidated under the circumstances to which you have alluded, is it not a frequent consequence of that consolidation abandoning the tillage system, and recurring to the grass system?—In a very great degree.

Is there not a general feeling, that dairy cows are more profitable than cottager tenants?—In many parts.

The result of this alteration from the arable system to the grazing system is, to reduce the demand for labour very considerably?—Very considerably.

Is not the grass system adopted in consequence of its being the more profitable of the two?—It is considered as such.

Would not a fewer number of persons be employed in consequence of turning arable land into pasture land?—Certainly there would.

But the alteration of system will be more profitable to the landlord than the system which he has abandoned?—Yes.

Then will not the landlord have increased means of giving employment to the peasantry of the country?—Generally speaking, the landlords of Ireland are so encumbered, that even under the improved system of large farms, the revenue they receive from their estates does not pay the interest of their debts, and leave them sufficient to subsist on.

Is not a considerable proportion of that increased revenue to the landlord sent out of the country, remitted to absentees?—An immense quantity.

Do

387
Sir J. Anderson,
Bart.

(27 June.)

Do you mean to apply your statement, that there is that change from small to large farms, generally to Ireland?—I believe, when farms come out of lease, it is generally done.

Have you known any instances in which the population of farms has so augmented as, after the support of that population, to leave no surplus in the nature of rent?—I have heard of instances; but I cannot speak of my own knowledge.

Do you think the distress of the last six or seven years has materially decreased the population?—I do not think it has; I think population is increasing at a most terrific rate.

Do you think the actual produce in your part of the country is as great as ever?—I do not think there is as much land tilled as there was during the war.

Have there not been considerable efforts made in the neighbourhood of Fermoy to introduce a more improved system of agriculture in that neighbourhood?—Very considerable.

Have those efforts, generally speaking, been successful?—I believe the best system of agriculture in the county of Cork is to be found in the neighbourhood of Fermoy.

Is that very superior to any other system of agriculture?—Inasmuch as the Scotch system is superior to the Irish.

How long has that been introduced in that part of the country?—My father introduced it about twenty years ago.

Do you not think that the introduction of an improved system of agriculture in other parts of the country would have the effect of giving a more steady and enlarged employment of the people?—It would be of the greatest benefit.

What steps were taken by the late Mr. Anderson in introducing that improved system of agriculture into the neighbourhood of Fermoy?—My father got scientific men from Scotland, who set an example to the people, and he laid out very considerable sums of money in carrying his plans into effect.

Was there a disposition on the part of the people themselves, as far as their limited capital allowed, to profit by the example that was shown?—The Irish are very tenacious of changing their plans; but when they are convinced that a plan is right, there are no people that take it up with greater avidity.

Did they adopt those improvements?—To a very considerable extent.

Have they adopted the improved implements?—They have.

Those implements are not introduced without a great expenditure of money?—My father, in improving Ireland, spent a property of 20,000*l.* a year, which has been lost to his family.

You have stated the evils arising from absentees; can you state how any of those evils could be remedied?—I think it would be a decided advantage to the country if there was a tax levied on all absentee property, and the money thereby raised given to the county in which the property was situated, which would relieve them from a considerable proportion of the expenses of public works.

You do not allude to any system of gratuitous relief?—By no means, it would be productive of great harm.

Do you think that any system of gratuitous relief could be introduced without being productive of the worst consequences?—I do not think there could.

As far as individual charity goes, is there or is there not, on the part of the Irish peasantry themselves, a great disposition to relieve the distress of others?—I do not believe there is a more charitable race in the world than the lower Irish, it is only sufficient to plead poverty, and you are sure to be relieved to the extent of their ability.

Have you known instances in which persons, in very deep distress themselves, have endeavoured to relieve the distress of others?—I have, of many; if a poor man goes into an Irish cabin, if they have only two potatoes in the house, they will give him one.

Have you yourself suffered in your house, has it been attacked?—Not at all; where the lower Irish are kindly treated, they are uniformly grateful.

You are in the midst of a disturbed population?—In the centre of the disturbances.

Do you anticipate an improvement in the situation of Ireland, from the rise in the price of agricultural produce?—Certainly, if there was a rise in the price of agricultural produce there would be an improvement.

From the rise which has already taken place, do you anticipate much improvement?—The rise is not to a sufficient extent; I beg leave to state, that I understand

Sir J. Anderson,
Bart.

(27 June.)

the average of corn is only struck on English corn, and it would be a great benefit to the Irish agriculturists, and also to the English, if the average was struck on English and Irish corn.

That circumstance could not have at all occasioned the distress, as no corn has been lately imported?—I understand, from information I got since I came to town, that there is a probability of the ports being opened, and if the average was struck on the English and Irish corn, together, the ports would not be opened.

Do you think the same number of people are actually employed on the land as were employed four or five years ago?—Certainly not; the reason is this, the farmers now work, themselves and their families; during the war they employed others to work.

Can you give the Committee any information as to charitable loans?—Yes, I can; I can speak from experience; my father, in Fermoy, advanced 400*l.* a year on a charitable loan for twenty years, and it was productive of a great deal of good?—To what class of individuals was it, generally speaking, advanced?—Generally to artisans.

Was it advanced in money, or was it advanced in implements to enable them to carry on their trade?—It was advanced in money, repaid by instalments; there was no interest charged.

Can you inform the Committee whether the individuals receiving that relief, were, generally speaking, people punctual in the repayment?—They were.

Was the effect of this charitable loan to enable such artisans as benefited by it, to employ themselves in productive industry, when, without such assistance, they must have been left without employment?—It gave them a capital to work on.

Can you state what sums were, generally speaking, advanced?—None greater than 5*l.* nor under 1*l.*

By what instalments were those sums repaid?—I think, as well as I recollect, 2*s.* a week.

Do you conceive that the extension of such a system would be generally useful?—It would be of use, though it could not give general employment.

What would be the limitation which you would affix to it, and which induces you to conceive that it would not be generally applicable, so as to give general employment?—I think it is more applicable to artisans than to any other class of people; though my father advanced it to labourers occasionally, though not generally.

Do you conceive that it would be applicable to the female peasantry of the country, so far as to enable them to provide implements for manufacturing flax and wool?—It would.

Would it at all extend the agriculture of the country at the present prices of raw produce?—No, I do not think it would.

Do not you think that your father, if he had employed that 400*l.* himself in any undertaking, would have given an equal quantity of employment to the people, as what he did by advancing it in loans?—The object my father had in view was to assist the industrious, but he did not confine his exertions to 400*l.* a year, he laid out large sums in employing the poor.

If he had employed that 400*l.* in agriculture, or any other employment, would he not have given occupation to an equal number of industrious people?—Perhaps he might.

Do you not conceive there are consequences connected with the system of charitable loan, which are distinct from the capital which it enables the peasant to command?—Certainly, it creates habits of punctuality.

Was that loan advanced to the peasantry on their own security, or upon the joint security of themselves and others?—Upon the joint security of themselves and others.

Was the repayment pretty strictly called for?—I do not think there was any great loss; not comparatively speaking to the good it did.

Do you not conceive that to make such a system most extensively useful, a rigid enforcement of the repayment of the sums by instalments, or in other words, a punctual execution of the contract is actually necessary?—I think the sum ought to be punctually paid; but the Irish in general, when a friend is implicated with them, are very particular in making the payment to the day.

After the repayment of the loan would not the people who did so pay it, be in as great a distress as before, for want of capital to employ themselves with?—They might perhaps be in as great a state of distress, but it would in the mean time give them a maintenance.

Then

389

Then the benefit to them would be only during the time the loan lasted?—The benefit would be only while the loan lasted; if they economised, perhaps, they might be more permanently benefited.

Sir J. Anderssn,
Bart.

Your father made an annual loan?—Yes.

(27 June.)

For how many years?—Twenty years.

Do you think the system of charitable loans might be universally adopted throughout Ireland?—It might be universally adopted, but it could not give universal employment; but the state of Ireland is at such a pitch that no change can make it worse, any change must make it better.

Henry Grattan, Esq. a Member of the Committee; Examined.

DO you belong to any society for the relief of the poor?—I belong to the Mansion-house Committee, in Dublin; to the London Committee; and to another society in London, called, the Society for Improving the Condition of the Peasantry in Ireland.

*Henry Grattan,
Esq.*

What proceedings were taken by those committees, during the last year?—The cause of their associating was, the great distress in the last year. Their primary object was to keep the people alive: and they accordingly supplied them with food, and in many cases, they did it without employment; but they accompanied those supplies with directions to give employment whenever it could be done, and when the crying cases were relieved; and as seldom gratuitously as possible.

What were the works they were chiefly employed in?—In making and repairing roads and bridges. The counties we first began with were those of Mayo, Galway, Clare, Kerry, Roscommon and Limerick; they afterwards increased to twenty-four; the distress in the first arose from the failure of the potatoe crop; in the latter, from want of employment. I saw most of the lists of persons that were employed, the number of days, and species of labour they were employed in. The letters that were received by those committees, either from individuals or from local committees in the various counties, stated that the greatest desire was manifested by the peasantry to obtain employment: some attributed the disturbances, and almost all attributed the distress, to the want of employment, and to the non-residence of the landed proprietors.

When the pressure was removed, what were the works attended to?—The committees attended particularly to the promotion of the fisheries, and the introduction of the linen manufacture in the south and west, conceiving these to be the best and most certain mode of procuring permanent employment, introducing trade, and promoting industry. With reference to the former object, the Dublin committee, in the first instance, entered into an arrangement with the Fishery Board, to construct piers along the western coast.

Did the committee assist in forwarding those improvements?—The Dublin committee had very small funds, but they advanced 1,400 l. I believe, to the Fishery Board, and the Fishery Board had received, I believe, 3,000 l. or 4,000 l. from the London committee. Some individuals, whose estates lay adjacent to the coast, offered to contribute, and, I believe, did render some assistance; and with these funds, we put into operation a great tract of country, and a multitude of individuals; and I think we constructed and repaired fifteen or sixteen piers, along the coast of Clare, Galway and Mayo, where the boatmen had no shelter or protection against the western storms.

What mode did the committee conceive was best calculated to assist the fisheries, as far as was consistent with their means; and what sum did it appear would fit out a boat for the fishing season?—In addition to constructing and repairing piers and quays, the object was to grant such aid to individuals, as was likely to assist the open boat fishery, and to give the seamen occupation. We received a number of applications for small sums, to procure hooks and lines, and for the repair of boats. Inquiries were made accordingly, and I think the answers stated, that for 5 l. a boat with four men could be equipped, and put in such a state that they could employ themselves throughout the year, and with a probability of profit. Mr. Townsend, the secretary of the Fishery Board, was consulted, and he said, that the best thing that could be done would be, to supply the individuals who fish along that coast, with the requisite implements, as in many parts they were destitute of any, and in most parts they were of a very bad quality, and of the rudest description. I recollect a particular instance, in which we received letters from a part of

the

Henry Grattan,
Esq.

(27 June.)

the western country, stating, that the only means the people had of getting hooks was to resort to a smith's forge; and the Mansion-house committee sent down, I think 100*l.* to supply those articles.

Do you think the people would be sure of a market, in case there was a greater supply of fish?—Yes; they would be bought for immediate use, and in a Catholic country, the consumption is great; or they would be cured, either for winter store, or to obtain premiums under the late acts of parliament; or they would be caught for the sake of the oil, which off the western coast, is of a very superior quality. I have seen the Galway people bring their fish very far into the inland parts; I have seen them in the King's and Queen's county, and the counties of Meath and Westmeath, selling the finest fish, and at very low prices. There is a fishery off the western coast, which several individuals whom I know, and who are competent judges, have stated to be capable of being greatly assisted, and the promotion of which would be a national benefit; I allude to the sun-fishery. From the months of April to June, the sun-fish appears off the west coast; they are about forty or sixty feet long, and the liver produces a quantity of oil. The people are so much in want of proper implements, that the way they kill these fish is, with a piece of forked iron, to which the boatman applies his shoulder, and forces into the fish as he is found lying on the surface of the water. It seldom strikes a vital part, and the fish often carries of the boat to a great distance; their lines are bad, and the men are sometimes lost, and the fish very frequently. If harpoons, and proper tackle were procured, great benefits would result. I know an individual who has seen off the coast of Waterford and Cork, large shoals of pilchards, a fish valuable for its oil, and none could be caught on account of the want of nets and implements.

Are you aware how many men are supposed to be employed in the fisheries, throughout Ireland?—I think, the reports of the inspectors of Irish fisheries, (which are very valuable,) state that there are thirty thousand men employed; but they represent them as increasing, and capable of being increased to a much greater number, if they got encouragement; and the reports conceive this as likely to arise, from the premiums given by the acts of parliament on the salting and curing of fish. Great benefits certainly would result from establishing salt stores, so as to enable the boatmen to get salt good, cheap and near at hand. The people cannot get the salt off the coast: I believe Westport and Galway are the only towns from whence they are supplied off the western coast, and there the salt used is of a bad quality, and very dear; it is often salt which has been used before, in curing bacon, &c. Frequent applications were made to our committee, and to private individuals connected with its members, to get loans of money, to enable the lower orders to procure salt at a cheaper rate: great complaints were made on this head by resident persons and others well acquainted with the Irish fisheries, and among them, Mr. Frazer, a very intelligent individual, who has given up much of his time to the question of our fisheries. He conceives the cheap supply of salt to be a most essential object.

Can you state any measures which have been taken by the committees for the improvement and encouragement of the linen manufacture?—The Dublin committee came to a resolution to appropriate the interest of their funds, which I think is 15,000 *l.* in purchasing implements for the furtherance of the linen manufacture, such as wheels, looms and reels, and they were to advance that to the different local committees, and where there were no committees, which often was the case, for want of resident persons, to two or three individuals, according to the tenor of the resolutions which they passed; I believe the resolutions were, that interest was to be paid. The plan, however, has not been carried into effect to that extent which they desired, in consequence of the difficulty of procuring security, there being very few, and in some parts no resident gentry; they came to a vote lately that 200 *l.* should be given for the purchase of those implements, but I am not certain whether that was fully carried into effect; there was a great difficulty in getting implements in the south and west; in a great many cases there were no wheelwrights, and no good materials for making wheels, and it is particularly necessary that the wheels should be of the best quality; when the wheel is out of order, the difficulty of repairs is considerable, and the young spinner gets dispirited and indifferent. In the county of Galway, in the district near Outerard, there was no individual who could make them, and the committee did not like to advance the money, in consequence of not having responsible individuals; the exact prices too were not known; they vary in different quarters; in some places they

391

Henry Grattan,
Esq.

(27 June.)

they were 10s. in other districts 8s. and in others 7s. 6d. a wheel; this threw a good deal of impediment in the way; but as to the utility and the great advantages resulting from distributing those implements, the probability of introducing, with success, the coarse woollen and linen manufacture, the certainty of restoring order and quiet, by thus affording employment and encouraging industry, there was not a doubt in any person's mind with whom we either conversed or communicated.

Can you mention any instance where the plan you state was carried into effect with success?—In the county of Galway I sent down several sums of money, entrusted to me by the London committee; to one quarter in particular I sent 13 l. with this I provided wheels and reels, and they were sought for with an avidity quite surprising; in another quarter, the children were supplied with flax and wool, these they manufactured from their raw state into a coarse sort of stuff, and with it entire families of children were clothed who had before been almost destitute of clothing; the individuals who got the implements, agreed to pay in kind, or by instalments in money. I have tried this in several counties, and every where with success; it would scarce be credited what a small sum would procure occupation for great numbers of children; I think with 10 l. or 12 l. I kept thirty children employed during three months; but the peasantry are, literally speaking, quite abandoned, and left destitute of employment. The nobility and principal gentry, generally speaking, do not live in Ireland; they deprive the inhabitants of the benefit arising from example and instruction, and leave those who reside, the office of discharging that duty which they owe their country; it is a very hard task we have to perform; I am convinced, and so are all whom I have ever conversed with on the subject, that if the upper orders resided, and if the lower orders were employed, Ireland would be a tranquil country.

Do you know what the Linen Board pay for the wheels, and whether they send any to the south of Ireland?—I believe the allowance from the board is 10s. per wheel. I understand latterly, the Linen Board have sent grants to the southern parts, but not in great numbers, and not near as much as is desirable to a quarter where it is sought to introduce the manufacture, or to give occupation to the lower orders; I believe the mode, as to their grants, is to vote a number of wheels, instead of a sum of money to an individual, and then they let that individual make the best terms he can with the wheelwright; for instance, where they vote twelve wheels, they give 6 l. but that 6 l. might get eighteen wheels in some places, in other places it might get fourteen, and in some only ten; I have known a wheelwright paid by the Linen Board at the rate of 10s. a wheel, at the very time he offered to make them for me, and equally good, for 8s. 6d.

Do you conceive the present constitution of the Linen Board to be such as to give the greatest efficiency to the encouragement derived from thence to the linen manufacture in Ireland?—From what I have heard, and from some little experience, I should say not.

Who are the individuals who constitute the Linen Board?—Principally noblemen; a few bishops are members; most of the body not generally resident in Ireland; there are no Roman Catholics among them.

By whom are they appointed?—I think they are appointed by the government.

Have you ever heard complaints of the difficulties which are felt in procuring attendance on the part of the Linen Board?—Yes, I have; but I have known individuals obliged to come to Dublin, from a very great distance, in order to form a board.

Do you not conceive that an alteration in their constitution which would deprive any individual who did not attend to his official duties as trustee, of his right of continuing a trustee, would materially improve the constitution of that board?—Unquestionably.

Are not the appointments to the Linen Board, generally speaking, considered as political appointments?—So I have been informed; I can only mention in my own instance; on the vacancy, occasioned by the death of lord Tyrawley, I spoke to individuals, one of them somewhat connected with the government, respecting the possibility of my being appointed one of the trustees, not that I wished to put myself under any obligation to the present or to any government, nor did I make any application to that effect from individuals connected with the government; I heard nothing more on the subject, but from a person who was better acquainted with the Linen Board than myself, I was told that such places were given to individuals of high rank in society, and were, in fact, government appointments.

Henry Grattan,
Esq.

(27 June.)

By your answer to the last question, do you mean to imply more than that these appointments are, generally speaking, conferred upon individuals in the confidence of government?—I mean that they are given to persons connected with government, or to persons considered as supporters of government: I should not say that it is a corrupt appointment; but out of the seventy-two members that compose the board, between forty or fifty are those whom we call supporters of government, and very few are those whom I would consider the reverse.

Do you think the existence of the Linen Board essential to the success of the linen manufacture?—Certainly, I think they are of great service; but as to the Linen Board, I can only mention a circumstance in my own case. I have taken, undoubtedly, some pains in the proceedings regarding the employment of the poor for the last two years, and so have my relations; and from having made exertions in different parts of the country, I conceived that I might have some chance of obtaining a grant. I accordingly applied for a district peculiarly deserving of it; a very industrious person had established a bleach green and beetling machine and mill: I applied on behalf of a district where the people were very poor, but very anxious to get wheels, and they signed a memorial, which I sent in; several of the children who could not write, got their names written down, and affixed their mark; I sent that memorial to the Linen Board, which was returned to me, and I got no grant. I then applied to one of the trustees, and I was advised to send in the memorial again; I sent in the memorial again, with a letter repeating the circumstances, and urging them more strongly, and all I received was, I think, 6*l.*: at the same time, I know individuals of this body who receive and distribute fifty or sixty wheels every year. I conceive it would have been politic to encourage persons who reside in Ireland, and who are anxious about her concerns; and I am free to say, that this did not strike me as a fair mode of extending the manufacture, or introducing it into the south and west.

Do you not think that any possible benefits which may arise from the Linen Board, are benefits that rather arise from the improved habits in those parts of the country where that superiority exists, rather than from their affording any additional encouragement in the north, where that trade is carried on to great advantage?—I conceive there is a direct as well as a consequential benefit; but the benefits resulting from the introduction of that manufacture in the south of Ireland can scarcely be conceived. The anxiety at present existing there is very great. The ground there is very well calculated for growing flax: wool can readily be procured; in Kerry it is remarkably fine, and the peasantry could manufacture a mixed stuff, as well as good linens, and thereby clothe themselves; in several parts of Ireland they are at this moment almost naked. I collect, from their grants having been, till of late years, kept principally in the northern part, that the object was to keep the linen manufacture in the north, in that particular district of Ireland.

You have stated that the Linen Board, in your opinion, are anxious to confine the encouragement to the north; what may be the reason for that preference?—Perhaps they thought it better to support a manufacture established, rather than force it into districts where it did not as yet exist, or perhaps the acting individuals of the Linen Board are better disposed towards the inhabitants of the north than the inhabitants of the south.

On what ground?—Perhaps they think it more politic that the people of the north, who are considered a more active and a shrewder race of men than the people in the west and south, should be supported in their acquired habits of industry, who as yet have made no progress in the introduction of manufacture, and that success in these quarters would not be certain.

Would not the demand for linen secure the extension of that manufacture in the districts in which it is already established, without any encouragement from government?—Unquestionably, if there was a sufficient market, the manufacturer would proceed without forced aid; but there can be no doubt that the grants assist it. As far as I am concerned in the northern parts, I find the tenants pay their rents from linen, and, generally speaking, not from agricultural produce.

Do the grants force a market at all?—No; but the grants enable the people to be better clad, and their children to be better clad, because grants supply them with looms, and reels and wheels: every peasant's house almost is a manufactory, and a small thing gives a stimulus to their hopes and industry; they can grow the flax, and make linen for themselves; and, in consequence of that, you see the people in the north almost all clad, while you see the people in the south almost naked.

Do you not think that would be equally the case, if there were no linen board, and

393

Henry Grattan,
Esq.

(27 June.)

and no encouragement now given to that manufacture?—No, I think not; from what I have said before, and from what I have seen in those parts with which I am acquainted.

You are of opinion that the grants should be appropriated more to the south where the trade is in its infancy, than to the north where it already flourishes?—Certainly.

From the knowledge you have of the state of the south, do you think there is an equal facility for carrying on the linen trade there, provided it had equal encouragement as in the north?—I do; where a manufacture is established, of course there is greater facility for the increase of that manufacture; but the capabilities of the south, and the capacities of the lower orders of the people there to forward such a manufacture, I conceive to be as great as in the north, and in some places greater; arising from the nature of the soil, and from the rivers, the facility of transport, and communications and conveniences of that sort.

Provided they were supplied with reels and other implements for carrying on the manufacture in the south, do you conceive they would be equally capable as in the north, and that the manufacture would flourish in the same way as it has done in the north?—Unquestionably; and I can only say, that the greatest anxiety prevails there to obtain those implements; and every person that the committee in Dublin consulted or communicated with, and that I personally applied to for information, were of that opinion; as well as that some measure of that sort had now become indispensable in order to secure the peace of the country, by giving employment to the inhabitants.

Are not encouragements more necessary to establish the manufacture rather than to support it, when once established?—Undoubtedly; but at present the question in Ireland is the support of the people, and the safety of the upper orders by giving employment to the lower: in the south the manufacture is neither established nor encouraged; latterly an excitement has been created, and this too, in several instances; I will mention one, in the county of Cork, Mr. Leader, a very intelligent person, from the encouragement he has received from those several committees, has in many instances promoted the growing of flax; he has sown fifty acres in the county of Galway; likewise flax-seed has been sown where none was ever sown before; and in one place I know, that instead of sowing barley for the purpose of illicit distillation, which the peasants used to do formerly, they have put down flax-seed in lieu.

Have you ever known any districts in Ireland in which the want of a spinning-wheel, or of a reel, operated as a bar to the introduction of domestic manufacture and industry in a family?—A number of instances, I have known them to be constantly borrowed; I believe they are often let out for hire (though that is not the habit of the Irish) and I have been frequently stopped by women and children asking for them; a young girl considers a wheel as a sort of a marriage portion. I have seen them show with the greatest pride a wheel they have kept and used for twenty years.

Is there a great anxiety on the part of the people to become possessed of those implements of manufacture?—Very great; in the counties of Cavan, Longford, Kildare and Monaghan, I was surprised at the eagerness which the people showed; children who can work, read or write, know well the advantages of getting wheels; in Cork, and in Galway the same; I sent them some portion of the grant from the London committee, and the individuals who applied, agreed to contribute a sum equal to one-third of the sum I gave, for the purpose of procuring them implements.

Would not the interest of individuals induce them to supply them with those implements, if government did not?—If they had the means, but at present the gentry who remain in Ireland are not very rich; the middle classes of society are poor, and those whom we call the middle-men, are nearly broken; the Irish gentry get very little rent, and they get very ill paid, and they find it difficult enough to pay the interest of the mortgages and bonds which they owe, and afterwards to support themselves.

Then if they were not in their present difficulties, you think the manufacture might thrive without such protection?—I think if the manufacture was once set up, it probably would go on; and as far as my observation and experience have served, I have witnessed great individual exertion; but I do not think that manufacture in the south and west will ever thrive without encouragement; in a multitude of places there are no resident gentry; the peasantry require to be nursed as well as the manufacture, they are in a state of despair; their produce does not fetch a remunerating price; they have great difficulties and privations to encounter.

Henry Grattan,
Esq.

(27 June.)

Do you conceive that the gift of wheels or other implements, would be as advantageous as enabling the poor to acquire them through the medium of their own industry?—Certainly not; but at present that question cannot arise, because at present they have not the means, though they possess the desire; I beg to say, that the principle on which the individuals and local committees act, is to give nothing gratuitously, and the people never object to give a return, either in kind or in money.

But supposing the implements were put in the hands of the poor, and that they were bound to pay the price of those implements by easy instalments, do you not conceive that this would be a system preferable to gratuitous gifts of reels and wheels and looms?—Undoubtedly; if all implements were procured through labour it would be much preferable, and productive of much greater benefits than if they were given gratuitously; it would produce a sensible moral effect on the minds as well as the habits of the people.

Have you any doubt that there would be a disposition on the part of the peasantry of Ireland to repay, by instalments, the value of the implements that might be so given?—None whatever; I think the contrary.

On what is your opinion founded?—On practice; having myself tried it, and having relations and friends who have tried it also; for instance, the wheels that I gave out (and I gave a great number within this last year), were given on the condition that certain sums should be repaid for the wheel, or a certain quantity of yarn, and the people agreed to repay the amount of the wheels; and they agreed to repay it by yarn or instalments, which ever I chose.

Did they perform that agreement?—In some cases they have, but I only commenced this spring, and the flax for yarn is not yet come in; to show the punctuality and readiness of the people to repay money, I beg to mention, that a relation of mine, in the sheep-shearing season, used to advance to the peasants money to purchase wool, in order that they might make stuffs, and cloth which they call linsey-woolsey, and frieze, and sell it at the markets and fairs, and invariably the peasants were punctual in their returns; certainly they require attention, and to be kept to their good habits.

Have you been concerned in the management of any charitable loan societies in Ireland, or are you acquainted with the existence of any such societies?—In the city of Dublin I know there are some charitable loan societies, but I do not belong to them.

Do you know any thing about them?—I have seen their reports; I have examined their accounts, and the proceedings of one in a parish in Dublin with which I am connected, and, as I recollect, the plan there adopted seemed to me to have succeeded.

If from private subscriptions and government loans they should be supplied in the counties that you are acquainted with, so as to encourage the industry of the lower orders, are you of opinion that there would be found gentlemen of the country who would become security for the money so advanced?—In some places they would, but in several there are no resident gentry at all. As far as the committee went, they found, among the associations for the employment of the peasantry, a great desire to procure those loans; there arose a difficulty, however, from a resolution which rather clogged the grant, because it required interest to be paid by instalments at certain times; it will be difficult to procure interest to be paid punctually; it will be much easier to procure the repayment of principal by short instalments.

Does it not appear extraordinary that they should have the means of paying the capital, but not the interest?—It would certainly be easier to pay the interest than to pay the capital; but they would rather pay the capital without interest. The peasant could scarcely keep the accounts, and the committees would be involved in a troublesome transaction: in time, however, it might be done; at first I fear there would be some loss.

Do you conceive, that in those parts of Ireland with which you are acquainted, a very great proportion of the population are without employment?—In the parts that I personally know, having lands in several of them, I would state that the majority of the people had nothing to do.

Do you consider that deficiency of employment to be one of the great causes of the disturbances in Ireland?—I have not the slightest doubt of it, not only in my own experience, having found those tenants and persons to be well-conducted who were employed, and others who were not employed being very much the reverse, but

395

but from the experience also of individuals who have corresponded with our different committees; and I have got in my hand, letters from Mr. Leader, from the county of Cork, and from another person from the county of Tipperary, and they mention this very subject; the latter individual writes that he has been there for the last ten or fifteen years, and every day has convinced him more and more that employment would do more towards securing the peace of the country than all the laws on the statute-book, or than twenty thousand troops.

Henry Grattan,
Esq.

(27 June.)

Such being the opinion of these individuals, have they taken any steps to procure employment for the peasantry?—They have. Mr Leader resides in the barony of Duhallow, a disturbed district, and Mr. Phelps, who is connected with the barony of Middethird, likewise a disturbed district: the latter has set up a flax-mill, for dressing flax upon a new plan; and thus has afforded a proof of the advantages that might be secured to the country, and the benefits that would be likely to ensue by encouraging intelligent and experienced persons. This individual has set the mill up, as he states, entirely at his own expense. Mr. Leader informs me, that he has sown a great quantity of ground with flax, and that he has procured other people to do the same, under the idea, that the linen manufacture, in that quarter of Ireland, would receive encouragement from government, and from public spirited societies. Those individuals, especially Mr. Leader, possess great local knowledge; and not only those, but almost all the individuals with whom I have conversed on the subject, are of opinion that something must be done with a view to employ the lower orders; and as far as I have seen and understand, I should say, that if something is not done, the south and west of Ireland must either be covered with camps or poor-houses.

What do you mean by poor-houses?—Workhouses would be a more proper term: I mean, places where you must feed or employ the people.

Do you conceive that any enlarged system of giving gratuitous relief to paupers would be productive of advantage to the people of Ireland?—I should say, that in the abstract it would not, inasmuch as gratuitous relief is a bad principle; but a government must find employment for the people, or else must keep the people alive, or they will rob and murder to keep themselves alive. Last year gratuitous support was a matter of absolute necessity; but being relieved now, any recurrence to a gratuitous system would be productive of bad consequences.

If relief was to come in the way of a rate on the parishes, and they were obliged to supply the poor not only with provisions, but work, do not you conceive that it would be the best security against the return of the evils which are now felt in Ireland?—If there was any plan, the result of which would be to give people employment, it would be productive of good; but if it was a poor-rate, which would afford them support gratuitously, I think it would be injurious.

Sabbati, 28^o die Junij, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

Mr. John Brakenridge called in; and Examined.

WHAT has been your principal occupation?—My life-time has been devoted to agriculture.

Mr.
J. Brakenridge.

Where have you studied and pursued agriculture?—In Scotland, and in the north of England.

(28 June.)

Have you applied yourself generally to agriculture, or to any particular department in it?—To every branch of agriculture, including draining, planting, and the general management of estates.

How many years has your attention been given to that subject?—About fourteen years; since I was eighteen years of age I have had the management of considerable agricultural operations.

Do you consider yourself well acquainted with the details of agriculture?—I should hope I am.

Have you lately visited Ireland?—I have.

How long did you remain there?—Something more than seven months.

In what year was your visit?—In 1822 and 1823, from the beginning of October till the middle of May last.

Mr.
J. Brakenridge.

(28 June.)

What parts of the country did you visit?—The south of Ireland principally.

Will you name the counties?—The counties of Dublin, Kildare, Carlow, Kilkenny, Waterford, Cork, Limerick, Clare, Tipperary, Kerry, King's and Queen's Counties, Wexford, Wicklow, East Meath, Louth, Armagh and Down: I looked more particularly into the state of agriculture in the first seven and the last one.

What is the state of agriculture, as it appeared to you in Ireland?—Very bad indeed.

Is it much worse than the state of farming in any part of England with which you are acquainted?—Certainly, very much worse.

What are the imperfections in the system of agriculture which presented themselves most obviously to your attention?—There is no regular, at least no beneficial rotation of crops adopted; implements are not only very scarce, but the few there are are extremely defective; drainage is generally very much neglected, by which large tracts of the best lands are lost, and the climate, necessarily, must be very much affected by the great surface of bog and water. The farmers have no accommodation, either for themselves, or to enable them to preserve and bring the produce of their farms to market in the best possible state.

To what do you attribute the defective state of agriculture in Ireland?—I should attribute it mainly to the almost total want of skill and capital among those who occupy the lands, and the very small extent of farms, whereby, even if the farmers were in possession of the means, they have it not in their power to make the most beneficial arrangements for cultivating their farms, and preserving and preparing the produce for sale; also, to the want of manufacturing establishments, in which those people who ought to be withdrawn from the cultivation of the soil, having neither skill nor capital for that purpose, might find employment.

Do you not conceive that the small extent of farms which you have adverted to, arises, in a great measure, out of the want of capital in the country?—I should certainly think so.

Are you able to state, from your own observation when you were in Ireland, whether there is any alteration of system now going on which tends to consolidate the small farms into great ones?—I was informed that the system of consolidating small farms into large ones, has been acted upon for some years.

Did you communicate, when you were in Ireland, with any of the country gentlemen and agriculturists?—I did; I took every opportunity in my power of doing so.

Did you hear from them a very general complaint of the subdivision of the land, and the smallness of the farms?—There was a difference of opinion in that respect, but, generally speaking, those who seemed to understand most about agriculture, and who had considered the state of the country, complained of the bad effects resulting from the small farms and great subdivision of the lands.

Did such persons express a disposition, in the management of their own property, to counteract the small division of farms, by consolidating small farms into large ones?—They generally expressed a most anxious wish to make such alterations in the subdivision of their estates, as would enable them to introduce a tenantry possessing skill and capital for the most productive cultivation of their properties.

Do you think that large farms would employ the same number of the population as small ones?—I do not think that upon large farms the extent of population would be in the same proportion to the extent of land as it is now upon the small farms in Ireland; but I should think that as many people would be actually employed upon large farms, under an improved tillage system.

From the observations you have made in Ireland, as connected with the enlargement of farms there, was there not also a disposition to alter the arable land into grazing farms?—That has been the case hitherto for some years; but it must depend very much upon the localities of the situation, and upon the demand that may exist for the different kinds of produce: I believe, if there be any difference at present, the balance is in favour of tillage land.

Do you not know that a great complaint has been made respecting the want of employment of the poor in England, from small farms having been converted into large farms?—I know that that has been the case; but the change, in my opinion, is now come to its limit; for, at the present moment, the value of the produce of arable land, when compared to the cost of production, is at least as great as the value of the produce of grass land, when compared to the charges which come against it. This must check the tendency to throw tillage land into grass beyond a certain extent,

397
Mr.
J. Brakenridge.

(28 June.)

extent, and will always regulate the proportion betwixt them; I speak of the country generally: in certain situations it will always be more profitable to keep the land under tillage, and *vice versa*.

Having stated the difficulties which now exist on the defective state of agriculture in Ireland, what remedy would you suggest for the improvement of it?—I should suggest the introduction of manufacturing establishments, to give employment to those people who ought to be withdrawn from the cultivation of land, and to enable landlords to select intelligent individuals either upon their estates, or to introduce such from other parts of the kingdom, for the cultivation of their lands.

How would that object be obtained by the establishment of manufactures in the country?—At present, a landlord anxious to improve his property, finds it necessary to introduce people who have skill and capital; and in order to do so, he must remove a great many people who are now employed upon the lands. Now there do not exist any other means of employment for them in Ireland, and this tends in a great measure, in my opinion, to create the disturbances which at present exist; but if manufactures were introduced, those people would find profitable employment in them: the result would be, the introduction of the improvements to which I have alluded.

From the observations you made during your visit, can you inform the Committee whether you consider a very great proportion of the population to be without adequate means of employment?—The season in which I was there was after the harvest, and of course the operations that were then going on were rather limited; but it appeared to me that a very great proportion indeed, at least one half of the working population, were unemployed; perhaps a great deal more.

Supposing the introduction of such manufacturing establishments as you have alluded to, and the subsequent establishment upon farms of a better class of tenants, what are the consequences that you would anticipate to follow from it?—The consequences would be, the adoption of a regular rotation of cropping, a substantial system of draining, the introduction of an improved breed of sheep and cattle, and greater care in the breeding and feeding of stock generally; but the greatest and most beneficial advantages which I should think likely to result from these establishments, and the improvements which would follow, would be the improved condition and habits of the people.

Do you think that can be done without the introduction of some additional capital into the country?—Perhaps it might; but it would be slower in its progress. I certainly think it necessary that as much additional capital should be employed in Ireland as would enable them to put manufacturing establishments into operation; if that were done, the benefit that would result to agriculture would lead to the improvements I have mentioned.

What other benefit do you anticipate from such manufacturing establishments besides those to which you have already alluded, namely, the withdrawing from the occupation of the soil the small class of farmers and cottagers?—By giving the people employment they would be enabled to live comfortably, and would feel interested in the permanent prosperity of the country; they would be enabled to give their children a proper education, and bring them up in industrious habits; thus the most beneficial effects would be produced upon the moral character of the population generally.

How would it have the effect of enabling the larger farmers to cultivate the land better than it is now cultivated?—By enabling them to make proper arrangements for that purpose; at present there is no such thing in the small farms in Ireland.

Do you conceive they could do so in the state of deficiency of capital which now exists in the country?—I have said just now, that it would take a great number of years to effect that object, without additional capital being thrown into the country; but the result of these manufacturing establishments would give such an impetus to agricultural industry, that in the course of a few years they would be enabled to effect these improvements.

How would that give this impetus to agricultural industry?—By raising the price of labour, and consequently creating an additional demand for the produce of land.

How do you connect the rise of the price of the produce of land with the rise of the price of labour?—By the people living better and consuming more.

If there be at the present moment a deficiency of capital to carry on the cultivation of the land, would not a rise in the price of wages rather increase that deficiency to which you have alluded; would not the farmer have to pay more for the wages of his agricultural labourers?—This increase in the value of labour will be the consequence,

Mr.
J. Brakenridge.

(28 June.)

sequence, not the cause, of this increased capital ; I go upon the supposition, that an additional capital is thrown into the country to establish those manufactures.

How do you conceive that the introduction of additional capital employed in manufactures, would improve the state of agriculture in Ireland?—By a greater number of people being employed, and receiving wages, which they now do not, and spending that money in purchasing food and whatever they consume ; the greatest part of which would be raised from the soil of the country.

Would not the same benefits be given to the agriculturists of Ireland, provided that demand existed, though it should be from this country?—I should think not, because they would then be loaded with a great body of unemployed people.

Is it of any importance to the agriculturists whether the demand arises from the manufacturing population of his own country, or from the demands of another country?—It certainly is, not only to the agriculturist, but to every other member of the community. Agriculture and manufactures tend to encourage each other ; manufactures can be carried on most successfully where, not only the food of the manufacturer, but also, a considerable quantity of the raw material is produced ; and agriculture is, in like manner, benefited by the demand which manufactures create for its produce. Thus, by combining agriculture with such manufactures as the local capabilities of the country naturally suggest, the value of the produce, and consequently the means of giving employment, will be much greater than where the whole population are employed either in agriculture or manufactures. A country cannot be in a state of prosperity while its produce is all of one kind, and while it depends on another country not only for a market for that produce, but also, for its supply of such manufactured articles as it may require.

Would not the home consumption of the manufactures encourage agriculture?—Certainly ; the home consumption of manufactures is an evidence of the flourishing state of agriculture.

And the flourishing state of agriculture would reciprocally encourage manufacture?—Certainly.

Provided the whole of the capital of Ireland, however large it might be, were employed in agriculture, and there was an effective demand for the whole produce by England, would not that be a very prosperous condition for the Irish?—Yes ; provided the demand was such as to give employment to all the people of Ireland, as well as the capital of the country.

Can an increased price of labour in any country be of advantage to the employer of labour?—Certainly ; because this increased price of labour arises from the increased value and demand for the produce that this labour produces.

Provided there were the same demand, would it not be his interest to have labour at a low price?—Certainly, it would be the employer's individual interest.

If small farms were consolidated into large ones, would they afford more or less human food, and other raw produce?—The consolidation of small farms into large ones, to a certain extent, would enable the farmers to introduce more beneficial arrangements, and a better system of cultivation ; and would certainly afford a greater quantity of produce : but grass land does not produce the same quantity of food as tillage land.

If not thrown into grass land, would it produce more human food, and other produce?—Certainly.

Will the consolidation of small into large farms, improve or deteriorate the condition of the labouring classes in Ireland?—Those who are employed upon the large farms will certainly find themselves in a better situation ; but a great number will not be employed.

Would it not be the interest of the farmer, in consequence of this increased produce upon those large farms, to employ the people either in extending the cultivation of land, or upon manufacture?—That necessarily depends upon the proportion there is, between the supply of and the demand for agricultural produce.

Does it not essentially depend upon the quantity of food and necessities produced?—It depends, I think, upon the value of the food and necessities produced.

Do you mean the money value?—Yes ; in as far as money represents the real value.

Is it of any importance at all, what the money value of the produce of the country is, provided its quantity remains the same?—It is of very little importance what the quantity of money is, by which the value of produce is represented ; but the supply and demand being the same, the money value would remain the same.

Not

Mr.
J. Brakenridge.

(28 June.)

Not if the value of money altered, from its being increased in quantity, or increased in value, or diminished in value?—The proportion between the supply and demand, is that which, in my opinion, principally determines the money value of any commodity; but supposing the value of money to alter, the value of commodities would alter in the same proportion.

Supposing the value of money to vary, the money price would vary in the same proportion?—Yes.

Must not the demand for labour essentially depend upon the means of employing labour?—Certainly.

And must not the means of employing labour depend essentially on the capability of feeding and clothing the people?—Certainly.

Then, by increasing the quantity of food and clothing, by the consolidation of small farms into large ones, will there not be an increased means of employing the people?—The value of this produce being the same, certainly there would.

Have you not already admitted, that the means of employing labour depend upon the quantity of produce; of what importance, then, can be its value?—When the surplus cannot be disposed of, no matter what the quantity be, it must limit the means of employment.

Can it not always be disposed of in exchange for labour?—It certainly can; but then it would be a very unprofitable speculation to be giving a portion of the produce for labour, unless you have a market for the surplus.

Is there any want of market for the surplus produce of the land of Ireland, while the market of England is open to it?—No; I believe there is a demand in the market of England, either for home consumption or exportation, for all the surplus produce of Ireland. Although there has been a want of market, that, in my opinion, arose from the privations of the people in Ireland; they do not enjoy a fair proportion of the produce of the country.

Then, will the consolidation of small into large farms, improve or deteriorate the condition of the labouring classes in Ireland?—It would certainly improve it.

Have you any reason to think that tillage land, in Ireland, is now passing into pasture land?—That has been the case, as I was informed; but it was a general observation, made by agriculturists in Ireland, when I was there, that the grass lands were paying as badly as tillage lands.

When such observation was made, did it apply to the grazing lands, the fattening lands, as they are termed in Ireland, or to dairy lands?—I think it was applied generally: the dairy was the department which, at that time, returned the greatest profit; but that cannot continue to be the case long; the graziers will keep a greater number of dairy cows, and fatten fewer.

Are you not aware that the dairy farm is the farm which has been most profitable of late years in Ireland?—I am.

Therefore, as far as profit goes, you conceive there must be a natural tendency towards the conversion of arable farms into dairy?—Certainly; but that is limited.

Would not the improvement of agriculture in Ireland, have precisely the same effects as the introduction of an additional capital into Ireland?—It certainly would; it would immediately produce additional capital.

The advantage resulting from increased capital would be, to increase the annual produce of the country?—Certainly.

Improvements in agriculture or manufacture would have precisely the same effect?—Precisely the same effect.

What was your general observation with regard to the quality of the soil in Ireland, as compared with that in England?—Generally it is very far superior, and the proportion of arable land much greater in Ireland than in England, that is, the proportion of arable land to the whole; I of course restrict my observations to the countries I have mentioned.

Has the demand from England for the surplus quantity of corn of Ireland, yielded a remunerating price, to your knowledge?—My previous answer requires a little explanation perhaps. When I say that the demand of England is equal to what she herself can produce, and what Ireland can spare, I should mention at the same time, that in consequence of the ports being opened in the commencement of the year 1820, there has been a general stagnation in the corn market, and the Irish farmers generally complained that the price they could obtain was not a remunerating price; but had it not been for this cause, that would not have been the case.

In ordinary years, should you have any doubt that Ireland could sell her corn to England at a remunerating price?—I certainly think so.

Mr.
J. Brakenridge.

(28 June.)

Must not that depend on the quantity?—That is the reason why I gave my former answer to the question respecting the money value of commodities; but the demand will generally regulate the supply.

You would give then the answer you have given before, that large farms would increase the quantity of produce?—Certainly they would.

And that the quantity of produce increased to a great extent, while the consumption of it from England continues, that generally speaking, it might yield a remunerating price?—Should the supply of corn in consequence of a favourable harvest, or diminution of the consumption, be so great as very far to exceed the demand, of course it would reduce the price so much, as perhaps, not to afford a fair remuneration to the grower.

You have stated, that as far as your observation goes, the soil of Ireland is superior to that of England?—I have.

The rate of wages is, generally speaking, lower?—Yes.

Then those two positions being admitted, must it not follow as a consequence, that the Irish farmer must obtain in the market of England a price that would compensate him for his expense in growing corn?—Yes, I think so, because the Irish farmer from the capabilities of the soil, and the low price of labour, would generally be able to supply corn to the English consumer at a lower rate than it can be grown in England.

Would not the effect of an increased cultivation in Ireland, and the production of an increased quantity, be, that some portion of the lands of England would go out of cultivation?—That would only be the inferior soils.

You conceive that the effect of a general depression of agricultural produce is, to make the cultivation of poorer lands less profitable?—Certainly it would.

And consequently to exclude them from cultivation?—To a certain extent.

The exclusion of the poorer descriptions of soil is likely to take place in a much less extent in Ireland than in England?—I think so.

Therefore the depression in agricultural produce is less felt in Ireland than in England?—Provided Ireland were in the same situation respecting employment for her people.

Do you not apprehend, that by a very extraordinary increase, the quantity produced in Ireland, by throwing the small farms into large farms, it would not only throw out of cultivation in England the poorer lands, but the best land of England?—No, I do not think it would throw the best lands of England out of cultivation.

Did you make any observation in Ireland as to the number of crops that are successively produced without manure?—I did.

Will you state the result of those observations?—In the neighbourhood of Adair in the county of Limerick, I was taken into a field, (this was in the month of January) where they were taking up a crop of potatoes, and I was informed it was the fifth crop of potatoes in succession, without any manure.

Was it a good crop?—A very good crop.

Have you paid any attention to the cultivation of flax?—I have.

Where have you seen it best cultivated?—I have seen it best cultivated in Scotland; indeed it is only there I have seen it cultivated; the season of the year I was in Ireland precluded me from having an opportunity of seeing the mode of cultivation there.

Do you conceive the soil and climate of Ireland to be well adapted to the cultivation of flax?—I certainly do; very superior to those of any country I am acquainted with.

Are there any defects in the mode of cultivating flax in Ireland which have come within your observation?—There are many defects in the system, as it was described to me by intelligent people well acquainted with the mode of cultivating flax in Ireland.

Will you state what those defects are?—The ground upon which it is sown is generally very badly prepared; the steeping process, upon which a great deal depends, is, as far as I was able to learn, very badly performed, and the flax is much injured by being dried by means of fire, a practice, in my opinion, quite unnecessary: scutching by hand is also very injurious, as by it the flax produced is not only very unequal in the fibre, but also two or three inches shorter than might be expected from the flax when pulled. It is an observation which I have generally heard made by the flax purchasers in Scotland, that go over to Ireland to purchase flax, that the flax offered for sale in the Irish market is not of so good a quality as might be expected from the appearance of the crops when growing; this they attribute,

in

(28 June.)

in a great measure, to the process of grassing, as it is called, *i.e.* spreading the flax on grass land after rotting.

From the observations you have made, and the communications you have had, are you led to imagine that the value of the flax when standing, is infinitely greater than the value of the flax crop when produced for the market, after steeping and scutching?—I mean to say, that the value of a flax crop when produced for market, is not so much as might be expected, as compared with the value of the flax when growing.

Having stated that the practice of hand-scutching is injurious to the quality of the flax crop, what other process of scutching do you allude to as being preferable?—By scutching-mills.

Are those in general used in Scotland?—They are; there is no such thing as hand-scutching in Scotland that I ever heard of.

Do you conceive the establishment of scutch-mills to be essentially necessary to the profitable cultivation of flax, and its preparation for market?—I do.

Can you inform the Committee, whether scutch-mills exist to any extent in those parts of Ireland which you visited?—I cannot say to what extent they existed, but it is to a very limited extent; Mr. Fisher, of Limerick, told me there were only three in a very extensive district, which he mentioned, in the south-west of Ireland.

In those districts in which scutch-mills have been introduced, can you inform the Committee whether you have reason to believe that their establishment has been attended with beneficial consequences?—I was informed so.

Will you proceed in your observations with regard to the management of flax?—There is a want of care in rippling, that is, separating the seed from the flax; because, unless that is done carefully with a proper machine, you break two or three inches from the length of the flax.

What machine do you allude to?—It is generally called a rippling-comb.

Is that machine in general use in Scotland?—It is; and has been very lately improved.

Are you aware whether that machine has been introduced into Ireland?—I believe it has.

Do you know whether it is generally used in those districts to which your evidence refers?—I understand it to be generally used; but from the information I got, the people did not use sufficient care in the use of it for separating the seed from the flax.

Is there not a great carelessness with respect to the saving of home seed in Ireland?—There is, and a general prejudice against saving the flax-seed at all.

Do you conceive that to be a prejudice merely, or an opinion founded upon a fair investigation of facts?—My opinion is, that it is prejudice merely.

Then you consider, that if proper means were taken, the domestic supply of seed in Ireland might be carried much further than it is?—Certainly.

Have you heard, or do you know, that considerable inconveniences arise in Ireland from depending, to a great extent, on foreign importations for a supply of the seed?—I was informed so.

Is a change of seed equally requisite in flax as in corn?—It certainly is.

But, notwithstanding that, should you conceive that the domestic growth of flax-seed might be carried in Ireland further than it now is?—Certainly.

Do you not consider that the flax-seed of home growth might be used, by changing it from one district to another, in the same country?—It certainly might.

If that was the case, it would do away the necessity of foreign importation?—Not entirely: still it would be necessary to import foreign seed; but I have not a doubt that Ireland might supply two-thirds of the quantity necessary.

Will you inform the Committee what defects you have observed in the mode of preparing flax for the market, in the steeping process?—The steeping-pools, I have been informed, (for although I saw some, I did not see the pools generally) were not properly formed: the flax is generally thrown promiscuously into the pool; sufficient care is not taken to cover it so as to exclude the light. When taken out, it ought to be washed and examined, and those sheaves which appear to be not sufficiently watered, or rotted, should be laid in the centre of a heap or row of sheaves laid up to drain, in which both ends of the flax ought to be free.

Are you acquainted with the mode of cultivating flax in the Netherlands?—I am not much acquainted with it.

Do you know that the exclusion of light, to which you have referred, during the steeping process, is considered indispensably necessary in the Netherlands?—I do; that

Mr.
J. Brakenridge.

(28 June.)

is considered essentially necessary : but the mode of doing it is different from that practised in Scotland. In the Netherlands the flax is closely covered with mud : in Scotland the most intelligent flax growers endeavour, by every means in their power, to exclude mud ; they would wish, if possible, to have the bottom of the pools grown over with grass, or at least quite clean, and the flax covered with sod, the grass side next to the flax.

In the Scotch mode of steeping flax, the exclusion of light is also considered necessary ?—Yes, by the most intelligent flax growers.

From your observations in Ireland, do you believe the exclusion of light is not attended to ?—I believe it is not ; and it is impossible to produce flax of an equal length or colour unless the light be excluded, and the flax uniformly or equally compressed when steeping. The mode of examining the flax when taken out of the pool, is also of much greater importance than flax growers are generally aware of.

Do you conceive that the introduction of scutch-mills more extensively, and of persons who might be able to instruct the peasantry in the proper mode of preparing flax, would be attended with beneficial consequences ?—It certainly would.

From any observation you have made during your visit to Ireland, do you conceive there is, on the part of the farmers, or peasantry, any indisposition to profit by the more extended experience and skill of others ?—Not more in Ireland than other countries ; a change of system is generally opposed with some degree of prejudice ; but that does not exist to any greater extent in Ireland than in other places.

Have you ascertained whether there is a greater anxiety, on the part of the Irish peasant, to obtain information ?—Yes, there is a very great anxiety.

What difficulties do you conceive now to exist, to impede the introduction of the improved cultivation of flax ?—The same difficulties stand in the way of a more extended and improved cultivation, which exist with respect to the improved system of husbandry : but from what I could learn, it appeared to me, although there is a market established in most towns of Ireland, yet the poor people, who would be most benefited by the cultivation of flax, cannot avail themselves of it, partly, on account of the distance that they would have to go with the small quantity they could produce for sale, and partly because they feel themselves much at a loss as to the market price of it ; and thus, in some degree, at the mercy of the merchant. It therefore occurred to me, in order to introduce the cultivation of flax generally, that landlords ought to appoint agents to take the produce of their tenants, however small the quantity, and in whatever shape, whether as flax, yarn or linen ; allowing them the fair value for it. This would furnish them with a merchant in whom they could confide, for their flax ; and would tend more to encourage the peasantry to grow flax, and manufacture linen, than any thing I know.

Do you think that any effort that can be made, with that view, by individuals, is more likely to prove effectual, than the natural effects of the markets themselves ?—This would tend greatly to aid the natural effect of the demand for the produce of the flax.

Do you conceive that the landlord would be equally competent to deal in the produce of the land, in the shape of flax or yarn, or manufacturing industry in linen, as the merchant ?—I do not think he would ; and perhaps it might not be attended with any profit to the landlord. I speak with a reference to the introduction of the thing.

Have you been able to make any observations, as to the introduction of the linen manufactures in the neighbourhood of Clonakilty ?—I know it is very generally established there, but I am not competent to speak to the manufacture of it.

Do you know whether the successful introduction of the linen trade into the south of Cork, has been through the agents of landlords, in the manner you recommend, or by the ordinary effects of the market ?—I rather understand it to be through the aid of the Linen Board, and the natural effect of the markets. I have no doubt that it is now entirely supported by the latter.

At the present moment, the growth of flax is chiefly on the part of the poorer cottagers, in very small patches of land, for their own use ?—Yes, it is.

Having stated there is a deficiency in the scutching-mills, and possibly in the rippling-machines, or the skill in using them, is there any other deficiency of implements, as to the manufacture of flax ?—I do not know of any rolling-mills, in the south of Ireland, which are very essential to the manufacturing of flax.

State what description of implement you allude to, and the uses to which it is applied ?—It is better known by the name of beetling-mill : the operation consists

in passing the flax through several sets of rollers, after it is steeped and dried; if it is not properly rolled or beetled, it breaks in the scutching-mill, and the fibre goes away with the haulm or stem of the plant.

Mr.
J. Brakenridge.

(28 June.)

What observations did you make as to the actual condition of the peasantry in those parts of Ireland?—The great body of them certainly live in a very wretched condition.

Have you ever seen, in any other part of the empire, misery and distress, that in any degree approaches the distress of the Irish peasant?—I have not.

Can you conceive any greater extent of personal privation, which is consistent with the actual existence of a human being?—There is a large body of the Irish peasantry living in such a state of misery as I had previously no conception of: I had never imagined that any human beings were living in such wretchedness.

From what you were enabled to collect in Ireland, are you led to imagine that that state of the distress was the ordinary state of the poor in that country?—With the exception of some small tracts in the neighbourhood of the towns where employment was more generally given, I think it is the case generally.

Did you visit any of their habitations?—I did; I took every opportunity of going into their cabins, and I had very frequent opportunities of visiting them; I went over estates in different parts of the country, and had an opportunity of seeing in what state they lived; I refer not only to the labourers, but to those who are called farmers.

What is the state of their habitations, generally speaking?—Their cabins, generally speaking, scarcely contained an article which, in this country, would be called furniture.

Was there any sufficient supply of bed covering?—I was in some cabins where there was no such thing, at least I saw none, and they told me they had none; they showed me a corner of the cabin where there was some fern, and a quantity of straw thrown over it, upon which they slept in the clothes in which they worked; in one cabin, the only articles of furniture I saw, were a pot and a wooden bowl, in which cabin there were nine individuals. This was on the Blainey road, leading from Cork.

What was their dress generally?—In the neighbourhood of the towns, they appeared to me to be dressed in cast clothes, of which there are a great many sent from England, and I know there are large quantities of old clothes sent from Glasgow to Ireland; the children were clothed with the clothes which had been worn by their parents.

Were they cheerful under all those privations?—Wherever they had a meal of potatoes they were cheerful.

What do they drink with the potatoes?—As I understood, the larger body of them had nothing to drink but water.

Were you able to ascertain whether, in the midst of this misery and wretchedness, the peasantry of the country were not only patient in enduring it, but anxious if they could give relief to persons in greater distress than themselves, in cases of sickness and old age?—So much so that I am quite convinced, if the peasantry of this country or Scotland, were placed in the same situation with the Irish, they would be more turbulent, and the country much more disturbed than Ireland is; I think the Irish peasantry certainly show a great degree of patience.

Having stated that the food of the peasantry was potatoes, the Committee wish to ask you, as a practical agriculturist, whether, in a moist climate, like that of Ireland, and the deficient system of agriculture you have alluded to, the potatoe crop is not one of considerable uncertainty?—It certainly is; and although the same quantity of labour can raise a greater quantity of food in potatoes than, perhaps, in any other description of crop; it is an article of which the surplus of one year cannot well be preserved to supply the deficiency of the next.

Is not it not only uncertain, but a crop so expensive in removal from place to place, that the surplus produce of one district can but rarely find its way to make up the deficient produce of another district?—It is so; the expense of removal is so great, compared to the value of the article, it will scarcely pay for it.

Can a labourer who is fed on potatoes, be kept in health and strength at a much cheaper price than if kept on wheat?—Yes, he can, certainly; but I should doubt whether he could do the same quantity of labour.

Do you think an Irishman would do more labour if he had a different quality of food?—Yes; I can speak to that from experience in England and Scotland; where

Mr.
J. Brakenridge.

(28 June.)

they are better fed, I can perceive a great improvement in them as labourers, but this arises from various causes, not only from being better fed, but from having better implements put into their hands, and acquiring a better mode of applying their physical powers.

Is not the increased rate of wages they receive here, paid in money, also one of the causes to which you attribute the great productiveness of their labour?—Yes, no doubt it is.

What was the general rate of wages, as far as you can recollect it, in the parts of Ireland which you visited?—From 4*d.* to 8*d.*, or rather from 6*d.* to 8*d.* per day, with the exception of such as may be employed by a few large proprietors, who make it a rule to give more; I was informed there were several instances of this in the south, but I am not able to mention any, except that of Lord Lismore's estate, upon which it is a rule to give 10*d.* a day.

Have you been able to ascertain whether that is, generally speaking, the money price of labour, or whether it is allowed in account?—I was informed it was a very general system to pay the labourers, by allowing them so much in account for rent.

Do you not conceive that the consequence of such a system of allowance of wages in account, has a tendency to dispirit the labourer in the active pursuit of industry?—It certainly does.

Why?—An allowance in account for rent, may, in many instances, not be of equal value to the labour, as a money payment of the same amount; because a money payment may enable him to meet some demands that come against him, and from the produce of his field or garden, he may be enabled to meet the landlord at the rent-day.

Has he the same means, in this account system, of ascertaining that he is fairly dealt with?—He has not, and that is one of the great causes why people dislike it.

Provided he was fairly dealt with, do you see any great disadvantage in the system?—The cottager that has a potatoe garden, feeds a pig or two, and the payment of his wages, in the course of the season, as they become due, is frequently necessary to enable him to do so. It has been stated to me, that in consequence of not being paid in money, he was rendered unable to feed his pigs, with the proceeds of which he intended to pay his rent.

If his rent amounted to a 1*d.* a day, and he was entitled to 6*d.* a day for his labour, provided he received that 5*d.* in money, would it be of any importance whether he received it in that way, or received the whole amount of 6*d.*?—Provided the labourer understood the transaction, it would be the same thing, if done in that way.

At what time is the actual balance of the account settled?—I believe in November and May.

Do you not conceive there is, on the part of the Irish peasantry, a general doubt and suspicion with regard to their dealings, which leads them to feel some degree of uncertainty, as to whether they are fairly dealt with or not?—I certainly think there is.

Having stated there is a great proportion of the population of the country unemployed, can you state whether there is an anxiety on the part of the people to procure employment?—They are certainly anxious to procure employment, and those who were employed, even at very low wages, expressed much gratitude to their employers.

Are you aware whether the peasantry of Ireland migrate from the districts where they find it difficult to procure employment, to other districts where they conceive employment to be more in their reach?—I suppose there is a tendency to do so, because great numbers of them come over to England and Scotland in quest of employment.

What do you conceive to be the proportion between the wages paid in Ireland and the wages paid in England and Scotland?—The wages paid to the labourers, not mechanics, in Ireland, is not more than a third of that which is paid in the north of England and Scotland; those parts of the country that I am acquainted with.

Do you conceive that the payment of seven days wages in Ireland would represent an equal number of days food for an Irish peasant, that the payment of seven days wages in Great Britain, would represent in the food of the British peasant?—It certainly would, of that description of food upon which they live.

Is there not a considerable advantage accruing to the Scotch and English labourer, from the comparatively high value of their food, compared to their other necessities?—Certainly.

Mr.
J. Brakenridge.

(28 June.)

Is the expense of performing any agricultural, or public work in Ireland, reduced in proportion to the reduced rate of wages, as compared with the wages in Great Britain?—It is not; on the contrary, I have generally found that the same works which I have been accustomed to carry on to a considerable extent, cost as much in Ireland, and in many cases more, than I have been in the habit of having them done for in Scotland and England, even when done by Irish labourers.

To what do you attribute this fact?—To the want of proper implements, and the want of arrangements in the mode of carrying on the works; the labour being settled for in account of the rent, and, perhaps, from the workmen being less vigorous on account of the bad quality of their food.

What deficiency of implements do you allude to?—Almost all description of implements, agricultural implements, and others generally used by labourers.

Are the ploughs, harrows and other agricultural implements used in Ireland extremely defective?—Yes, extremely so; with the exception of a few introduced by gentlemen agriculturists.

Are they improving?—I cannot compare the present state with any former period, having only been in Ireland once; but I rather think they are improving.

From the general observations you have made, what do you conceive to be the causes of the distressed state of the peasantry in Ireland?—The want of employment certainly is one of the great causes, and the want of the means to give them employment.

What has produced the want of the means to give them employment?—I am not competent to say what have been the causes that have produced that want of means; that certainly arises from a variety of causes.

Do you not ascribe it to a redundancy of population?—During the war, when there was a great demand for agricultural produce, and Ireland being almost entirely an agricultural country, the people were generally employed in that department; since the termination of the war, and the great reduction in the value of agricultural produce, and consequently of the means of employment, a great many people, formerly employed in that, are thrown out of employment.

Do you not ascribe the present distress to there being too many people for the capital that is to employ them?—Certainly; there is not capital in Ireland to employ all the people there.

Would you not improve their condition either by diminishing the number of the people, or increasing the capital to employ them?—Certainly, if you withdrew people from a country where they are in a miserable condition you would reduce the quantum of misery in that country.

Would you not improve the remuneration to those who remained behind?—Certainly.

Would not the same effects be produced, if a large quantity of additional capital were to be taken from this country to Ireland?—Yes; it would improve the condition of the people without withdrawing them from the country.

Does not the wages of labour, in all countries, depend upon the number of the people, compared with the capital which is to employ them?—Certainly it does; the demand for labour depends upon the capital there is to create this demand, and the wages of the labourer depend on the proportion there exists between the demand for labour and the number of labourers.

Have any remedies occurred to you for the evils you have stated to exist?—Those I have already mentioned, and employing capital there to establish manufactories.

Could that be done without withdrawing capital from England?—I am not able to say whether there is capital unemployed in England sufficient to accomplish that object, or not.

Do you think there is any capital unemployed in any country?—If produce is capital, when there is a redundancy of produce, of course there must be to that extent, capital unemployed.

When there is redundancy of produce, can the owner of that redundant quantity be quite sure, in future years, he will have that quantity?—He certainly cannot.

Of course he cannot employ that redundant produce as a permanent capital?—Certainly not.

If capital were to be withdrawn from England to assist Ireland, should we not necessarily throw some persons in England out of employment, or lower the wages of the labouring classes?—I think it would tend to equalize the rate of wages in the two countries, and make the situation of the labouring community in the one country similar to the other.

Mr.
J. Brakenridge.

(28 June.)

If you, as an agriculturist, unconnected with any particular establishment in either country, were considering of a profitable mode of investing capital, do you think capital could be invested in Ireland in agriculture more profitable than it is in Great Britain?—I certainly do, provided it was invested to a sufficient extent to give employment to the people, and thus produce tranquillity in the country.

Do you conceive the disturbances in the country, and the insecurity which those disturbances produce, to be the cause which prevents the investment of British capital in that country?—I think it is the greatest cause, almost the only cause.

Assuming the tranquillity in both countries to be the same, have you any doubt British capital would be invested in Ireland?—Not the least doubt.

If so invested, do you conceive it would give a greater profit than if invested here?—It would for some years, but after a certain period it would equalize again.

Is it your opinion, that the productions of the country would afford sufficient capital for the employment of the population, if there was not so great a portion withdrawn in the way of absentee rent?—If the country were put in a state of prosperity, I have not the least doubt that the produce of the country would afford capital sufficient to give employment to the population, supposing there was not such a drain upon the country; but, from the best information I could obtain, I should think it necessary that some additional capital should be employed in the first instance.

Supposing the country to be quiet, do you think British capital could be more profitably employed in Ireland, than such capital may be employed in England?—I certainly think it would, for a certain number of years.

In reference to what you have said as to the clothing of the peasantry in such parts of Ireland as you have visited, have you ever entered any of those cabins where you have seen any of the children scarcely clothed?—I have seen many of them scarcely clothed, almost in a state of nudity; the whole of them are badly clothed.

Provided the people had employment, would it be of any importance whether that employment was in manufactures or agriculture?—I think it necessary that there should be manufactories, not only to supply the country with manufactured articles, but to afford a home market, to a certain extent, for articles of land produce.

Supposing that land produce could be readily exchanged with another country for its manufactured articles, would it be of any importance whether the people were employed in one way or another?—I should think not, except for the reasons I have already stated.

From the description you have given of the soil of Ireland, and the improvement of which agriculture is susceptible as it is now practised there, do you not think, if things were left to themselves, any additional capital the people might acquire by their own industry, or borrow from others, would rather be employed in agriculture than manufactures?—I should suppose it might, if under the direction of the gentlemen of Ireland, because they are better versed in agriculture than in manufactures; but I should suppose that British capitalists, supposing the country to be in a quiet state, would be more likely to invest their capital in manufactures than agriculture.

Do you not think that the capital employed in agriculture, with the advantages of the improved skill of English agriculturists and the goodness of the Irish soil, would afford more profits to the undertakers, than if the same capital was employed in manufactures?—Yes; but my opinion is, that it would afford still greater profits, provided there were manufacturing establishments at the same time in the country, because I think there are certain descriptions of manufactures that might be carried on in Ireland with greater advantage than they could be in England; for instance, the manufacturing of linen and coarse woollen cloths, and tanning; these seem to be manufactures founded on the staple produce of the country.

Do you think tanning could be carried on there with greater facility than in England?—I think it might be carried on with equal facility; the English import their bark, principally, and the Irish would only have to do the same thing; I believe that trade was carried on at one time to a great extent in Ireland.

Do you conceive, if an improved system of agriculture were introduced into Ireland that it would afford additional means of employment to the people?—I certainly think the improved system of agriculture would give actual employment to a greater number of people than the system at present existing in Ireland.

Do you know that Irish linen is sent in its unbleached state from Ireland to Scotland, and returned afterwards to Ireland for sale?—I am not able to say that it is sent into Scotland and bleached there and returned again to Ireland, but I know there

407
Mr.
J. Brakenridge.

(28 June.)

there is a great deal sent from Ireland to Scotland to bleach, but where it goes afterwards I cannot say; likewise I know it to be a fact, that there are many manufacturers in Scotland, and I believe also in England, who go to Ireland and purchase the Irish flax, and take it to Scotland and England, and make it into linen and bring it to market at a less price, through the aid of machinery, than the Irish can do, cheap as labour is in Ireland.

Have you visited any of the large establishments for the manufacturing of linen in the North of Ireland; Mr. Cheyne's, for instance, near Antrim?—I visited a large damask manufactory, Mr. Coulson's, at Lisburn.

Were there the same improvements in the machinery in that establishment as existed in Scotland?—I never was in a damask manufactory in Scotland except one, and I think the machinery in the one I saw in Ireland, appeared to me of a more improved description than that which I saw in Scotland though I do not think the arrangement was so good; there was a very confused arrangement.

What was the state of the peasantry in the north, that you visited, compared with the south?—Very far superior, both in their houses and clothing; and their education and habits generally.

To what cause do you attribute that?—To the employment that is principally afforded them by the introduction of the linen manufacture.

You think it is principally the employment produces the effect of their being a people with better habits?—I should more naturally suppose, that their better habits is the effect of their employment; at the same time, the good habits of the people certainly tend towards the prosecution of those establishments with greater vigour and ultimate success.

Did you obtain any information in the south of Cork, that leads you to imagine that the introduction of employment in that neighbourhood has improved the habits of the poor?—I did not obtain any information in that neighbourhood, more than in other parts of the country; but wherever the people were employed, it was very evident that circumstance had a beneficial effect upon their character.

Do you not think, in the north, the effect of the employment was visible in those districts where the manufactory was carried on, more than in the districts where it was not?—Yes, certainly; the people seemed to be all employed where I was, in the north; I was over Lord Downshire's estate, and some of the neighbouring estates.

Martis, 1^o die Julii, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

Gerrard Callaghan, Esq. called in; and Examined.

WHERE do you reside?—I reside near Cork.

Have you been lately in that country?—I left it about a month ago.

Gerrard Callaghan,
Esq.

What is the condition of the people in those parts of the country with which you are acquainted, with reference to employment?—The population, of town and country, is very destitute, and every day it appears to me the sources of employment are diminishing.

(1 July.)

To what causes do you attribute the diminished demand for labour, and the consequent want of employment?—To a combination of causes; but the primary one, I conceive, is the want of capital, and the want of circulating medium; the want of money in short.

If capital were placed at the command of any public or private bodies, do you conceive it could be profitably invested in Ireland?—I conceive if the general condition of the people was improved, so as to make consumers, that money might be profitably employed, whether belonging to the public or to individuals.

What do you mean by such investment of capital as would make consumers?—I conceive there is no use in establishing manufactures, unless you have a sale for manufactures, either of home consumers or by exportation.

Does the same remark apply to the extension of agriculture?—I conceive there is a market for the produce of Ireland, to any extent that it is capable of producing.

What do you conceive to be the produce of Ireland, in the answer to the last question; did you include in that her manufacturing produce, as well as her agri-

Gerrard Callaghan,
Esq.

(1 July.)

cultural produce?—I considered the question to refer solely to her agricultural produce.

Have you then any doubt, whether the employment of additional capital in agriculture in Ireland, would or would not be profitable?—The employment of additional capital, if coupled with skill, would be profitable, no doubt; but I conceive, that making the present surface of tillage more productive, by capital and skill, would give very little additional employment, if any, to the labouring population. I am not clear, that an improved system of husbandry would not rather diminish than increase the occupation of the labouring poor.

If you conceive that additional capital could be profitably invested in agriculture, in Ireland, are there any circumstances in the condition of that country which prevent such investments taking place?—The proprietors of land, and the general body of farmers, appear to me to be the most embarrassed class in the country.

The question refers to investments of English capital in Ireland; do you conceive that English capital could be invested in Ireland to greater profit than it could be invested here?—When you speak of investing money in agriculture, and making a profit by it, that will necessarily depend upon the charges attending it; the rent is the principal charge: supposing the rent to be the same in both countries, and the land to be equally good, I should think the capital would be more productive if laid out in Ireland, than in England.

Supposing the sum of 20,000*l.* or 100,000*l.* invested in the purchase of land, in Ireland, do you think that 20,000*l.* would produce more to the individual in Ireland than in England?—I think you can buy cheaper in Ireland than in England; you can buy land that will yield a better income in Ireland than in England.

If such investment of money in land can take place, with a greater profit in Ireland than in England, to what causes do you attribute those investments not being more frequent, so as to equalize the rate of profit?—Unquestionably the disturbed and unsettled state of that country, which has broken out in various forms, from time to time, for the last thirty years, has prejudiced the English generally against investing money in Ireland; and there certainly is not the same facility in recovering debts there, that there is in this country.

To what cause do you ascribe the disturbances, which thus impede the investment of English capital in Ireland?—The disturbances generally, in Ireland, I conceive, are imputable to a variety of causes. Perhaps it would not become me to state any political reason, but certainly, immediately, it is the destitute condition of all classes, but especially of the labouring poor: at the same time, in the south of Ireland, I think the labouring poor have been made rather the instruments of the views of the farmers.

Has any alteration in the condition of the farmers of late taken place, which indisposes them towards the general peace and tranquillity of society?—The late war acted as a very great stimulus to the speculation and industry of farmers in Ireland; and as soon as the war demand subsided, and as soon as, in consequence of that, the circulating medium of the country lessened, and the population having increased, their condition necessarily altered very much upon the cessation of war. Since then, there have been unfavourable seasons, low prices, and, with reference to the south of Ireland, there has been a destruction of an immense amount of capital and money, by the failure of the banks, from which it cannot recover for many years, without some great measure of relief.

Are you aware whether the gross amount of agricultural produce has diminished or increased?—The gross amount of agricultural produce, I should think, has rather increased.

Then, if the gross amount of agricultural produce has increased, how can any alteration in the price diminish the means of employment of the agricultural peasantry?—If the farmers have adopted fixed rents, which the value of the produce does not enable them to pay, of course they have been rendered the poorer, by the outgoing exceeding the income.

But if the produce be increased, the human labour employed to raise that produce must be increased also, must it not?—I doubt very much if it has.

Would not the landlords who receive those increased rents, have increased means of employing the people?—I do not say that his rents have increased.

The landlords receiving their rents in a circulating medium, increased in value; have they not, in consequence, an increased power of employing the people?—Certainly they have, if those rents remained in the country.

You

Gerrard Callaghan,
Esq.

(1 July.)

You have stated that considerable alteration has taken place in the circulating medium of the south of Ireland, and a destruction of capital, as you expressed it, has taken place; to what circumstances do you allude in that answer?—I allude to the failure of the Waterford, Clonmell, Limerick, Cork, and other banks.

At what period did those banks fail?—I think, in the spring of 1820 the greater number occurred.

Were those many of them amongst the principal banks in the south of Ireland?—There was no other bank, I believe, in Waterford but Newport's. I think Newport's had between 200,000*l.* and 300,000*l.* in circulation, on an average; the Clonmell bank, I should think, the same; the two Cork banks about 600,000*l.*; their circulation varied from 500,000*l.* to 600,000*l.*: the two Limerick banks had, I suppose, together, about 300,000*l.*

Were there not failures of some other banks also; was there not a failure of a bank at Kilkenny?—There was, and there were several others.

Can you at all inform the Committee, what proportion the circulation which was withdrawn by those failures, may be supposed to bear to the circulation of banks which continued in business?—The other Cork bank that preserved its credit, has not, I think, very much increased its circulation since.

Previous to this failure, what did the paper circulation of the south of Ireland generally consist of?—The circulation of the south of Ireland consisted entirely of private bank paper, with some national bank.

Was the proportion of national paper very small in proportion to that of the local paper?—Very small indeed, as it was only required in payments at public offices.

Of what paper does the circulation now consist?—Of private bank paper, and of bank of Ireland paper mixed.

Is the proportion of private paper much smaller as compared with the other?—I should think, in the country, people, from dear-bought experience and caution, must keep generally bank of Ireland paper; but in the towns, where the circulation is so quick, and where they can at once present the notes for payment if there be any distrust, the circulation consists of private bank paper chiefly.

Can you inform the Committee whether there is, or is not, a general feeling of distrust now with regard to private paper, which impedes the issue of ordinary banker's notes?—Certainly, people have not the same confidence in them; but the circulation is so quick, that it really signifies to them very little what is the symbol of value.

Have you any idea of what the proportion of amount of the circulating medium now is, to the amount as it existed in the most flourishing periods?—I should doubt if it is one-third of what it was in 1812.

To what districts does that answer apply?—To the counties of Clare, Limerick, Kerry, Cork, Tipperary and Waterford.

To what cause do you attribute this great reduction in the amount of the circulating medium in Ireland?—Of course, the diminished value of the produce of the country requires less money, and there is less property having occasion to be represented; also to the destruction of the banks.

What is the alteration in the price of raw produce during the same period?—What the alteration may be between the period of 1812 and just now, would not, I think, answer the inquiry, because just now corn is much higher than it was during the season when the farmers sold the greater part of their produce; but I should say, that the price of corn last winter certainly was not one-half what it was at the most flourishing time I speak of.

On what grounds is it you make the calculation of the amount of the circulating medium at those two different periods?—From my observation and knowledge of the general poverty and destitution of the country.

But not from any actual and official returns?—Not from any official returns.

You have said, that if an improved system of husbandry were adopted in Ireland, it would throw men out of employment; would that be the case if there was a greater demand in England for the produce of Irish agriculture?—I did not state that I thought positively that an improved husbandry would diminish the occupation, I was not clear whether it might not.

Would it if there were a greater demand for the produce of Irish agriculture in England?—I assume what I have stated before, that I think there would, at all times, be a demand in Great Britain and Europe for all that Ireland was capable of producing; what she produces now, or what she might produce by any improved system of agriculture.

Gerrard Callaghan,
Esq.

(1 July.)

Would not an improved system of agriculture, finally lead to an increased employment of the people on the land, and to a great increase of the produce?—It would certainly lead to an increase of produce, but I think that a greater extent of agriculture might be carried on under an improved system of husbandry, by occupying less people.

Would there be any difficulty in occupying an increased number of hands, provided there was a demand for the increased produce, in consequence of such improvement?—I say, that I think an increased demand for the produce, supposing the extent of land to be the same, would not, under improved husbandry, increase the occupation of the people.

Not if that demand were doubled?—I do not understand a demand for a thing that does not exist; the quantum of land that could be brought to produce corn, so as to leave rent after paying the expenses, must necessarily depend upon the price the produce sells for; if corn should remain at what I conceive a fair peace price, I do not think the quantity of land that could be brought into cultivation, profitably, in Ireland, can be very considerably increased; that which is already tilled may, certainly, by improved husbandry be made more productive, but my observation as to improved husbandry not requiring an increased number of hands, applies to the land already under agriculture.

Might not the same land employ an additional number of hands, if it were cultivated higher?—When I speak of an improved system of agriculture, I include all the contrivances of husbandry that are used in the best agricultural countries.

Does your apprehension then of an improved system of agriculture leading to a diminished employment of labour, refer to the possible introduction of machinery in agriculture so as to supersede human labour?—Chiefly so.

Do you conceive a capitalist would lay out his money in a thrashing-mill, unless he could send his wheat to market thrashed by a mill cheaper than if he sent it to market thrashed by hand?—Perhaps he may not; but I do not know whether a farmer would not prefer having machinery, costing him more, than having about him permanently, an increased number of labourers; those labourers marrying of course, and every year increasing the population upon his ground.

Would not the general principle of profit and loss regulate the outlay of agricultural capital, as it would the outlay of commercial capital?—No doubt, as a general principle, it would.

Then, if the effect of the introduction of machinery in agriculture were to produce corn cheaper, do you not think that reduction of price would have the effect of augmenting the consumption of that corn?—I do not think I said, that the introduction of machinery would make the corn produced cost less; I only alluded to it under the apprehension, that instead of affording increased occupation to the labouring poor, it might have a contrary tendency.

Would you call any thing an improvement in husbandry, which had not the effect of lowering the price of the corn produced?—I conceive it would be an improvement if you could produce an increased quantity from a given quantity of land, costing the same price.

Would not the price necessarily fall under such circumstances?—If it was general it certainly would.

From the knowledge you have of the state of agriculture in England, do you not know that it is universally the case, that thrashing-machines have decreased the employment of the poor?—Certainly, I should think they have; I have always been led to think so by all the information I have heard.

Would all other improvements in agriculture necessarily lead to the employment of fewer labourers?—That would depend upon the previous knowledge and degree of skill that existed; but to illustrate my observation, which was general, I shall state, that, within my own recollection, two men were almost universally, through Munster, necessary to plough; one to hold the reins and the other to lead the horses; and that now, generally, one boy does the work; he holds the reins and directs the plough.

As there remains in the community the power of feeding the other man or boy, will he not be productively employed on that or some other land?—The first part of that assumes what does not necessarily follow from either my answer or the question; but I allow that the saving of that man's labour goes to the pocket of the farmer, and he enjoys the benefit of it, provided he sells the corn at the same price, under both circumstances.

Gerrard Callaghan,
Esq.

(1 July.)

Will not the actual produce of the country be increased in consequence of this saving of labour?—No, but the cost of production is lowered.

Will not the quantity produced be increased, as this man may now be employed in production somewhere else?—If he is employed he can devote his labour to some other purpose.

Do you think that the reduction of paper issues in Ireland, produced effects equal or greater than those which are produced by an equal reduction in England?—I think the situation of Munster, in that respect, bears no comparison with any district of England.

Supposing the circulation of Munster to be reduced one-half, and the circulation of the county of York to be reduced one-half, do you think that the effect of that reduction, being the same in both cases, will be equal; or are there any circumstances in Ireland which would make the reduction more felt?—The effect of either a reduction of circulating medium, or an extension of it, must operate differently under different circumstances; if the circulation of the county of York is diminished, either from a less active circulation or less occasion for it, by decreased value of goods generally, that contraction operates in a natural way; without destroying, and probably not diminishing the nominal amount of capital; but in the south of Ireland, there has been a destruction of positive capital to a very large amount, and an annihilation of circulating medium to a large amount, founded upon the credit that those bankers had enjoyed.

What do you call the loss of capital of the country?—The difference between what the banks owed, and what dividend they paid, is so much loss of capital to the province.

Do you not call all the valuable produce of the land, manufactures and investments in trade and agriculture, do you not term them the capital of the country?—I call, certainly, the stock of a country capital; but I do not call the annual productions of the country capital.

Do you think the wealth of the country, the general stock of the south of Ireland, has been diminished by reason of the alteration in the paper system; is there less of stock in the country than there was then?—Yes, I think there is certainly less of that capital.

There is less of paper, but how has any thing else been reduced?—From the necessity of converting that stock into money to discharge engagements, and the late disturbances have also contributed to it.

Has the quantity of it been reduced?—Certainly, it has; farmers for instance, who were obliged to pay rent, have sold their stock; that stock has come to this country; farms in general, the dairy farms and the feeding farms are certainly less stocked than they were, and also the sheep district.

When you say that it has come to this country, do you mean in the shape of remittances to absentees for rents, or in what way?—I do not say that it all has come to this country; it has been consumed in Ireland or exported to this country.

Do you not know that the fixed payments, whether in the shape of interest, or mortgages, or head rents are, generally speaking, from the system of tenure of property in Ireland, infinitely greater, for instance, in the county of Cork or in the province of Munster, than they are in England?—Certainly.

Is not a considerable proportion of those fixed payments, which are made to this country?—No doubt it is.

Then, if the fixed payments remain the same, and the value of the produce be greatly reduced, the balance over and above the fixed payment will be smaller, which is left in the province of Munster, than it would be, in the case that has been put with reference to York?—The rents of Munster, for the last six years, generally speaking, have been paid out of capital, instead of out of the profits of the ground. If the charge upon the county, either in the shape of rent or rent-charge, or interest, be fixed, and the value of their productions be less than that charge, there is nothing for the occupiers of the ground, but on the contrary, their capital must necessarily be diminished.

Are the Committee to understand, that the effect of the late events in the province of Munster, to which you have alluded, have had the effect of making the fixed payment a much greater portion of the whole produce, than they previously had been?—I think rents, generally speaking, for the last few years, have been nominal; for it does not signify, if a proprietor had a greater rental upon leases, if the people have not the means of discharging it, there will be an end of the landlord's rental.

Gerrard Callaghan,
Esq.

(1 July.)

Do you not think the remittances of head-rents have continued?—To the extent that they were received.

Do you conceive, that the remittances of head-rents, and other fixed payments, bear a greater proportion to the whole value of the produce of the country than they did?—Yes, I certainly think they do; that must necessarily be the case where land is held under lease.

Have not the landlords been benefited in proportion to such increased proportion of value that they have received?—Generally speaking, when one man gets poor, another man gets rich to the same extent; and that is exactly what I wish to say, that the residents in England have got rich, while the occupants of Ireland have got impoverished.

Has this alteration, in point of fact, operated precisely in the same way, as if the number of absentees had considerably increased?—Certainly: we will suppose 500*l.* is the amount of fixed rent to remit, and 1,000*l.* the production of the land to meet it; if the production should only sell for 500*l.* it has the same effect on the country as if the charge had originally been equal to its entire production.

Would it not be so equally, whether the landlord lived in another country, or lived in Ireland?—If he lived in Ireland, the presumption is, that it would circulate again from him.

But as far as the fixed payment of rent is concerned, the occupier would be absolutely ruined?—He would, if the Irish landlord was to send his capital out of the country, or to hoard it up out of circulation.

You have put the case yourself, of a farmer having 1,000*l.* value in produce, but by some accident, that produce becomes worth only 500*l.*; if in both cases, he is under an obligation to pay 500*l.* to his landlord, is any thing left for him?—Certainly not.

Are the cases not precisely similar, whether the landlord lives in Ireland, or whether he lives in England?—No doubt of it, putting the case in that way; but as the presumption is, that a resident proprietor would expend that money about him, it may be presumed that the tenant would be better enabled, by whatever portion of that expenditure might fall to him, to meet his fixed obligation.

Of what advantage would the expenditure of the landlord be to the farmer, when, by the supposition, the farmer had nothing whatever to sell?—His production might, by the circumstance of the landlord's residence, obtain an increased price.

Then, it is only on the supposition that the produce might sell for something more than 500*l.* in case the landlord lived in Ireland, that you think the situation of the farmer would be somewhat better?—Putting that general principle upon the insulated case, it appears to be a just deduction; but however finely drawn and finely laid down the premises may be, or just the deduction, I have an impression that the condition of the Irish labourer and farmer would be materially improved, if his landlord remained in the country, spending the rents, instead of their being remitted out of his district.

In the answer you have given, do you not introduce moral and political considerations, as well as mere considerations of money, as to the benefits of residence?—I alluded only to its local and personal effects; but I should include those considerations.

Do you introduce moral and political results, as well as mere pecuniary results, when you speak of the benefits of residence?—Unquestionably.

Are the Committee to understand from you, that you attribute much of the distress of the people in Ireland, at the present moment, to the want of capital amongst them?—Mainly from the want of capital, and from the want of money circulation among them.

Do you not conceive that an increased capital would be liable to produce an increased circulation?—Certainly it would; but that circulation may be promoted by expedients.

Have you considered any mode by which the capital of the south of Ireland might be increased?—I have no doubt whatever that if a sum of capital, equal to that which was lost by the failure of the southern banks, were introduced into the south of Ireland, and in the first instance advanced to the landed proprietors, it would from them circulate through every channel; it would give life to every branch of industry, and diffuse an improvement in the condition and feelings of all classes.

Do you think that capital would be profitably invested, if the sum of 1,000,000*l.* were to be provided, to advance to the landed interests, in the manner you have described;

described; could it be employed with advantage to the public?—I have no doubt it would find its way, ultimately, into the hands of some person who would find the means of employing it profitably.

*Gerrard Callaghan,
Esq.*

(1 July.)

Where would you suppose it to come from?—I am supposing the only practicable expedient that I know; that is, supposing the legislature thought it expedient to advance a loan to the resident landed proprietors on the same principles, and in the same manner, as they did upon various occasions for the relief of commerce and trade in this country, upon the security of real estate.

Must not that capital so advanced, be withdrawn from some other part of the empire?—It need not be withdrawn from any part, but it may be new capital created.

How do you consider that such new capital might be created?—I conceive that treasury bills or exchequer bills might be issued, repayable in seven or ten years; that is one way of providing capital; but I should think a more natural way of providing it, would be, to obtain it from the Bank of England or Ireland, guaranteed by government, or advanced to government, in the first instance, upon the credit of the quit-rents and crown lands of Ireland.

Do you conceive that adequate security could be given for the payment of the interest of the sums so advanced?—Yes.

And a sinking fund for the repayment of the principal?—Yes, I think so, if that were required.

Then if such were the case, do you not think that advances might be obtained upon private security for the same objects?—No, I think not; we know, that although the legal rate of Ireland now is six per cent, there exists a difficulty in obtaining money upon the security of Irish estates, mainly from the circumstance, that there are very few such things in Ireland as a main mortgage, and from the causes I before alluded to.

Would not all those obstacles which make the advance upon private security difficult, be equally applicable to any advance on the part of government?—I should think, that although it would be equally applicable, there would remain sufficient security for the loan. I would suppose an estate, worth 60,000*l.*, is charged with bond debts to the amount of 20,000*l.*, I should say there is a very good security to the crown, for an advance of 5,000*l.* or 10,000*l.* upon that, although an individual would not lend upon it.

Would not the risk run by the public be equal to the risk run by an individual?—In other words, the degree of security capable of being given would be the same; but there exists the best species of security on which the loan I allude to may be advanced.

Would there not be some danger of landlords paying off their mortgages, for which they had agreed to pay a high interest with the money which they would borrow from government at a low interest?—If such a consequence were to follow, instead of calling it a danger, I should call it a great benefit; and that is precisely one of the good consequences that I should expect from the measure. If the loan were to be made at a cheap rate of interest, which I should say was indispensable, it would, no doubt, enable the land proprietors to reduce the charges that are at present fixed upon them; but if their bond-holders knew that they had such a loan to resort to, they would accept of a reduced rate of interest, rather than disturb their security; just as the five per cent holders did in this country.

If a man residing in England lent to you 10,000*l.* on an estate in Ireland at six per cent, and you could borrow that 10,000*l.* of government at four per cent, by which you would be enabled to pay him off, would any benefit whatever accrue to Ireland with respect to the employment of her people?—Unquestionably, upon the case which is put; but I should mention, that I stated that my view would be, to make the loan avail always to resident landed proprietors.

In limiting the loan to resident landed proprietors, is it your object to give an additional bounty as a reward for residence?—As a bounty for residence.

It appears very clearly, by such transaction, you would save two per cent per annum on 10,000*l.*; but the question is, whether there would be any additional capital whatever in Ireland?—Unquestionably there would; to the amount of that charge saved out of the expense of the mortgage, there would be 200*l.* taken from the mortgage in England, and the person in Ireland has that 200*l.*

Then you called the two per cent saved by you, in the supposed case, 200*l.* of capital?—Yes, I should.

Gerrard Callaghan,
Esq.

(1 July.)

In what way do you suppose any exchequer bill for any amount is capital?—It answers the purpose of capital.

Is it capital until it is turned into some of those objects which are favourable to production, such as raw materials, food, clothing, implements, &c.?—In my view, any thing that represents property is capital.

But can any man employ labourers by being possessed of an exchequer bill, without being able to turn that exchequer bill into implements of production?—Certainly not; but that is assuming what I should not admit.

Can he so turn the exchequer bill into implements of production, without depriving some other man of those implements of production?—He can convert the exchequer bill into implements of husbandry as easily as he can convert a piece of gold, in my view of it.

It is admitted that there is no difference between the piece of gold and the exchequer bill; but the question still arises, whether he can so employ those implements of production without depriving some other man of the employment of them?—It is a commutation of one article of value for another article of value.

Would the failure of a country bank, which had half a million of notes in circulation, in the least diminish the capital of the country where the failure took place?—I should certainly say so, in my view of it.

And to the extent of the failure?—No question of it; whether it is solid capital in the view of an economist, or not, it answers all the purposes of capital, and is so much property. Perhaps I may occasionally use the word capital for property.

You have stated that there is a great want of employment in the south of Ireland?—Yes, there is.

Can you inform the Committee, whether there is an anxiety on the part of the people for employment?—No doubt there is; they must be employed to exist.

Are you able to inform the Committee, whether want of employment is chiefly felt in those parts of the country which are or have been in a state of disturbance; whether you connect want of employment with disturbance?—They are connected; but the disturbances do not principally arise out of the destitute condition of the labouring poor. I think I stated, in a former part of my evidence, that I conceived the labouring poor were more the instruments of others than the persons themselves originating the turbulence of the country.

Can you state what the wages of labourers are, in those parts of the country with which you are acquainted?—They vary very much, and are merely nominal. I suppose there are parts of Munster, where you may get labourers for 3*d.* a day; and I should suppose the highest wages of a labourer, out of the towns, is 10*d.*

Is there, or not, a greater demand for labourers in the neighbourhood of great towns, than in the remote parts of the country; are the wages for labourers higher?—They are a little higher, but not so much for the increased demand for them, as from the increased price of the necessaries of life.

Are you aware whether there is any additional means of employment in the southern part of the county of Cork, in the neighbourhood of Clonakilty, to what there are in the northern part of the county of Cork, in the neighbourhood of Donneraile?—The country people can only be employed in the construction of public works, or in manufactures, or local improvements.

Are you aware of the existence of manufacture in the neighbourhood of Clonakilty, and the non-existence of manufacture in the northern part of the county of Cork?—Certainly; the linen manufacture may be said to flourish about Clonakilty.

It does not exist, to your knowledge, in the northern part of the county of Cork?—No, it does not exist in the northern part of the county to any extent.

What is the difference between the southern and northern parts of the county of Cork, with reference to the tranquillity of the country?—The country round Clonakilty is much quieter; the people there having a resource, which they have not in the northern part of the county.

Have you then any doubt that the tranquillity of one district may be connected with the active employment of the people; and the disturbance of the other district may be connected with the want of that employment?—Certainly, it may be connected; but I do not think it is the primary cause.

You think it is one of the causes?—Certainly. If the labouring poor are unemployed, they are more easily made the instruments of the views of others.

From the altered value of agricultural produce in the south, is there not a general alteration

alteration taking place in the mode of managing lands?—I do not think that the farmers have either the same spirit, or the means which they had. Gerrard Callaghan,
Esq.

With regard to the relation between landlord and tenant, is there a growing disposition to consolidate small farms into large ones, and thereby to reduce the population on the farms?—During the war, when what are called middle-men had interests in the farms, the clamour and outcry against them was very great, and as farms fell out of lease, every proprietor was for subdividing his land: since the peace, and since those circumstances have occurred to which I have adverted in the former part of my evidence, as impoverishing a great proportion of the country, it is those middle-men who have paid the rent best, so long as they had capital to pay it; now scarcely any man of capital is found hardy enough to take a large extent of ground, and the proprietor is unwilling to divide it into small farms; at the same time he has no other resource but to do so, for you have not a choice of tenants in Munster.

(1 July.)

Are the Committee then to understand, that in point of fact there is not a system going on of consolidation of small farms into large?—I have not heard of any.

Are you aware of any alteration of system, by which the number of houses upon farms are diminishing by the exertions of landlords, and the population reducing by covenants against alienation, or any other method?—I have heard of those covenants, but really covenants with the class of the cottage tenants in Ireland are merely nominal, you have no hold upon them by any covenant; but I believe that every judicious proprietor, when a farm comes into his hands, will, with a view to keeping down the population, pull down as many of those wretched hovels as he possibly can.

Have you any doubt, but that that system is acted upon in many instances?—I have no doubt it is.

Is it acted upon in a greater degree now than it formerly was?—I think it is, but I speak only of lands that have fallen out of lease into the hands of proprietors; but really in the present state of the country, I believe a man wishing to do that, has not had it in his power to turn a family out of a house to live on the road.

Do you believe, that in the disturbed districts in the northern part of the county of Cork, there is any proportion of the population which has been deprived of their ordinary mode of subsistence, by being deprived of their habitations?—Part of the disturbed district, in the county of Cork, is the most civilized part of the country; there are more resident gentlemen about there than in any other; but as I believe that a local cause would be discovered, if sought for, to be connected more or less with every appearance of turbulence in the county, I do not think that the circumstance of diminishing the number of habitations, is any leading cause of those disturbances.

Do you think it forms any part of the cause?—I never heard it did, and really I should not think it did.

To what local causes can you trace the disturbances in the northern parts of the county of Cork?—From the general state of society in Ireland, operated upon by its history and its laws, the disposition of the humbler classes to turbulence and to a breach of the laws, would necessarily be accelerated by a local cause of grievance, real or imaginary, from the general want of that sympathy and common feeling between landlords and tenants, such as exists in this country; there is not that security for peace and order that there is in other countries; the bad treatment of and the breach of faith with the tenants on the Courtenay estate, was the first match that lit up the spirit of the people, which grew into turbulence. It has extended itself to various other places; and I should say, that it was not the mere example of the disturbances in the county of Limerick that have produced the same results in parts of the county of Cork. I think high rents, and a reluctance on the part of the landed proprietors or middle-men, to come to terms with the occupants of the land, have formed great ground of disturbance amongst the farmers of the country; and that those farmers have made the labouring poor the instruments of their views to bring about that adjustment, and perhaps more than that adjustment; to obtaining the lands of the country upon lease at advantageous rents.

Do you mean to attribute to any considerable portion of the landlords of Ireland, a general want of sympathy and common feeling towards their tenantry?—I should be sorry to throw that general imputation upon the landlords of the country; but it is very well known that during the war, when a farm fell out of lease and was advertized, there was in nine cases out of ten, a postscript, that no preference had or

Gerrard Callaghan,
Esq.

(1 July.)

would be given to any one; and it was the highest bidder that generally obtained the farm; that circumstance, and the want of that gradation of ranks which exists, and is the bond of society in this country, makes a wide separation between the landed proprietor and occupant.

Do you conceive that the landlord in Ireland has any greater means of fixing the rent which the tenant is to pay than the landlord in England, or any other country; supposing a farm out of lease, is it within the power of the landlord in Ireland any more than the landlord in England to fix the rent which the tenant is to pay?—Certainly now it is not.

Or at any time?—I believe there have been times since 1810, when occupants would have been found to promise any rent demanded for certain lands in Ireland.

But the ascertainment of the rent is the act of the tenant as well as of the landlord, is it not; the landlord has no power of fixing the rent, which is to be given for the land of which he puts the tenant in possession?—A bargain can only be made with the consent of two parties.

Do you conceive that the abatements of rent, which have come within your knowledge, in Ireland, have not been made with the same liberality that might be expected?—The situation of the gentlemen of Ireland is very different from that of England.

Can you state the difference?—There is scarcely a large landed proprietor in Ireland who is not subject to considerable fixed charges; family charges, interest of mortgages, and interest of bond debts, and portions for younger children; those charges being fixed, he is unwilling, naturally, to submit to any diminution of his income, if not reduced to it from necessity. I do not mean to say that the landlords of Ireland have not as much feeling as the landlords of any other country, but from the fluctuations that have taken place in the value of rents and of produce, within the last thirty years, they were very unwilling, for many years after the peace, to consent to any material abatement of rent.

Are the Committee to understand, that by reason of those fixed charges it is, frequently, not in the power of the landlord to make a sufficient abatement of the rent?—I have often heard of that being given as an answer; I would say, it is a common answer that when farmers have asked for permanent abatements, the individual has said, “how can I do it, I have to pay my mother so much a year, my sister so much a year, and interest so much to my younger brothers and sisters;” and I would say, that generally speaking, the class I allude to have, for the last five or six years, been really the agents and receivers for their family and their creditors.

Have you known, in the south, any instances in which the landlord has been left without any rent at all?—Yes, I have many.

Do you believe that there are many such?—I have no doubt there are; I have heard of many landlords who have received no rent whatever.

Did not the landlord gain considerably, in point of fixed charges, by the rise in the price of corn and the increase of rent during the war?—No doubt he did.

Has he lost more by the fall which has lately taken place, than he gained during that period?—I should say, that the most of his present incumbrances were imposed upon him during the war.

Do you think the whole of the incumbrances upon the land in Ireland, are greater now than they were during the war?—Yes, I should think they are.

To what cause would you ascribe the increase of those incumbrances?—A man possessed of landed property during those times of high values, valuing his property at his death, would give his family larger portions and jointures. A man finding his estate to be more valuable, would perhaps launch it out into more expense than he had before done, and, perhaps, would anticipate some of his income by taking money upon loan.

Is not the Irish landlord exempt from all farm repairs of house, barn, gates, hedges and other things, that the English landlord is liable to?—It is not the custom in Ireland for a landlord to defray the expense of any of those things.

Do you know any instances in which it is incumbent upon the landlord to keep the premises in repair?—It is incumbent upon no landlord, unless it is made a special covenant in the lease.

Is it not, in short, universally the custom in Ireland otherwise?—I never heard of a lease by which the landlord was bound to pay that expense.

Do you not make an exemption of individuals to the general statement you have given of the general distress?—Certainly.

Do

417

Gerrard Callaghan,
Esq.

(1 July.)

Do you observe any difference in the treatment of those landlords, who are very independent in their circumstances, towards their tenantry, as compared with the conduct of the landlords who are incumbered in their circumstances?—I am afraid I shall expose myself to some criticism by answering the question; but I must confess I have observed it. I think I see a difference of disposition in a tenantry that have been fairly and handsomely met by the landlords, as contrasted with the despairing situation of those that have no interest in their tenures. I know of an individual instance, where a kind and conciliating conduct on the part of a landlord in a distressed part of the country, has had the effect of preventing any outrages upon it.

Is there not a considerable mass of absentee property in the neighbourhood of that part of the county of Cork where the disturbances have lately existed?—In the neighbourhood of it, but not in the immediate neighbourhood of it; the Courtenay estate is upon the confines of the county of Limerick; then there is a large tract of country between it and Donneraile, where there are very few resident gentlemen; round Donneraile is civilized.

You have said that you do not consider the destruction of habitations to be one of the causes of disturbance; have not those gentlemen who have destroyed cabins been particularly marked out by the turbulent?—I never heard that.

Are the wages of labour to which you have referred, the money price of labour, or an allowance in account?—I speak, of course, of money wages.

What is the general system, is the general system a money price, or on allowance of so much for rent or for produce?—The country gentlemen employ their own labourers for their own work, and very little money, if any, is paid to them.

What do you mean by their employing their own labourers?—It is the general practice in Ireland for farmers, and others, to give a habitation and piece of ground to a labouring man; he gets a rent for this habitation and ground; and what they call the freedom of the collop, a cow and some sheep; and he receives his labour, which he credits him for at so much a day.

Are the Committee to understand that there is a rent account, in most instances, between the gentleman and the labourer, and that the labour of the peasant is paid for by allowance in rent rather than in money?—A certain part of it is paid.

How often are those accounts settled?—Upon my word I do not know, they are settled by the stewards of the gentlemen.

Have you any doubt, that that system of the payment of labour on account produces dissatisfaction in the mind of the peasant?—There is no doubt it is unsatisfactory to him, but what can a man do; those are the only terms upon which he can sell his labour, the country being overstocked with population.

Do you think the situation of the people would be better if the landlords paid them regularly so much a day, and received their rent regularly?—There is no doubt they would be more independent of the landlord; but I think in general they would spend that money somewhere else, and not pay the landlord any rent.

When a payment in money is made, is it generally in favour of the tenant or the landlord?—Speaking of the description of people to which I am referring, the balance must be from the landlord.

Are not many of those labourers, generally speaking, in the south, registered as freeholders?—I should say, very few of the existing labourers.

Do those accounts consist of many items, or is it merely rent set off against the demand that the labourer has for his wages?—I believe they consist of no other items.

Suppose a tenant in Ireland to lay out money in improvements, in building a good house, and adding to the comfort of the farm, is there any mode, under the usual practice of the south of Ireland, by which, at the expiration of his lease, he can receive any allowance from his landlord for the capital so invested?—There is nothing in the custom or the law of the country to give him any claim to it, except in the planting of trees; if registered, he can cut them down.

Do you conceive that any provision by which the tenant could receive from his landlord an allowance for improvements, at the termination of his lease, would be productive of a beneficial effect?—If the tenantry of Munster should remain such as they are, I think it would be a regulation good for the lawyers, instead of for the parties; that there would assuredly be a law-suit upon the termination of every lease.

In point of fact, is the land left in a better state at the termination of a lease than it was at the beginning of it?—Generally speaking, it is always given up in an impoverished state. In England you have a tenantry that have some capital. The

Gerrard Callaghan,
Esq.

(1 July.)

fact is, that the cottage tenantry in the south of Ireland, since the year 1793, ought to have remained labourers; they were never fit for any thing but labourers.

Is it your opinion, that it would be beneficial to convert small farms into large?—In the present state of the population of the country, I should say not.

Supposing a farm of one hundred acres fell out of lease to you, and you found it to contain a population of seventy or eighty persons, would you continue the tenancy of the farm to those seventy or eighty persons?—Certainly not, amongst the seventy or eighty persons; but I should find it very difficult to get a man of capital to take the whole hundred acres, without my making a considerable sacrifice to him; and I would, in such a case, certainly prefer sub-dividing it into two or three farms.

Taking the average of farms in the state in which you know the south of Ireland to be, and assuming that any of them, your property, fell out of lease in the new arrangements you would make, do you conceive that you would continue the same population on the farm, or reduce that population?—I would do every thing in my power to reduce the population, if I found the population to be excessive.

Have you any doubt that other landlords would find it their interest to act upon the same system?—I have no doubt they would.

Have you any doubt that the principal is acted upon in the new letting of lands?—I have no doubt it is acted upon in a degree where it is in the landlord's power to do it.

What becomes of the population who are thus turned off the estate?—I protest I do not know what becomes of the population of the country; it is growing up daily and hourly. You see people embarking in all parts of Ireland for England, in much greater numbers than you see them return; there are large embarkations for Canada, and for the United States, chiefly of persons carrying some property; and yet the population of the country seems to be increased. Really, within my observation, I think the character of the people has deteriorated: certainly, their stature is diminished, from living upon vegetable food, and upon a bad vegetable food; for I think the potatoe root of the country is degenerating.

Do you attribute any of the increased population of the country to the 40s. freehold system?—I should say, that the first impulse that was given to the population of Ireland was, the act that gave to Roman Catholics the elective franchise; it became the object of great parliamentary interests to raise as many voters as possible. Immediately after that followed the war; the demand for men for the army and navy, together with the increased agriculture in Ireland, operated as a premium for procreation. I do not know, that during the war, the circumstance of the Roman Catholic clergy having no provision operative; but certainly, since the peace and at present, the circumstance of the Roman Catholic clergy deriving their emoluments chiefly from the fees upon marriages, has had a great tendency to cause improper marriages.

Do you not conceive that the potatoe food of the peasantry is a great cause, in the south, of the increase of the population?—No doubt, the cheapness of provisions, in addition to those other causes.

Is not the cheapness of provisions, the first and principal cause, in your apprehension of the increased population?—Yes, it is the first cause; but if not operated upon by other stimulating causes, it would not, I conceive, operate as an evil.

Do you think that any of the other causes to which you have alluded could have produced a considerable augmentation of the population of Ireland, if it were not for the cheapness of food?—I think not.

Do you consider that the cheapness of food, without any other causes, would have produced the augmentation of the population?—I should say, that the cheapness of subsistence, in the abstract, is a good, and that it can only prove an evil, where it is acted upon by other causes creating a greater population than there is employment for.

Has not the increase of population compelled them to have recourse to that low and deteriorated food?—No doubt of it; they have no other food to subsist on.

Have you thought of any means by which the increased rate of population could be checked; is there any law which you could recommend which you think would have the effect of indisposing the people to marry so soon as they now do?—I would certainly say, that if the Roman Catholic clergy were made independent of that source of income which I have already stated, that so many marriages would not take place as do now.

Do you think, that by encouraging education, the people would be rendered more

419

more cautious and less disposed to place themselves in the difficulties to which they are now subject?—No, I do not think that the diffusion of education would check the population in that way.

Gerrard Callaghan,
Esq.

(1 July.)

Supposing the moral condition of the people to be raised?—If the moral condition of the people were improved, I think a man would consider more before he marries than he now does; he would have a higher sense of his dignity, and not get children to crawl about like vermin.

Would not education be one great means of improving the moral condition of the people?—No doubt it would work that, but very slowly.

What other means would you suggest, besides education, for improving the moral condition of the people?—I think that employment and education ought to go hand in hand; I think it is futile to be talking of educating the people unless you have the means of employing them; I think education will follow naturally if they are employed.

What is the system of education that prevails in the south, to your knowledge?—The schools that are established by the Hibernian School Society, and parochial schools; but I shall beg to add, that the Roman Catholic clergy oppose, by all the means in their power, the establishment of those national schools called, I believe, Hibernian schools; they will not allow children to go to them; they exercise their influence over the parents of the children, to prevent them from going to schools where the Bible is read; and I think that influence is so exercised by them, in a degree to call for the interference of parliament, unless some measure can be devised to reconcile the objects of all parties.

Is that not one of the great impediments to education?—Of course it is.

Have you ever known of very considerable efforts being made on the part of the Roman Catholic clergy for the establishment of schools?—I believe they have established some schools.

Is there not a very large school, one of the principal schools in the city of Cork, which is carried on entirely by the Roman Catholic clergy?—Yes, there is; my observation applied more to the country than to the towns.

But in the country have you not known schools carried on by the Catholic clergy?—I believe there are schools in each parish.

Do you wish to convey any idea to the Committee that, generally speaking, the Roman Catholic clergy are unfriendly to education, or only that they are unfriendly to a particular description of schools?—Whatever the genius of the religion may be, I would not say that the Roman Catholic clergy are unfriendly to the diffusion of knowledge and education, but I state that they are opposed to the establishment of schools where the Bible is read.

Even the Bible, without note or comment, as it is called?—I believe, in the Hibernian schools, the Bible that is circulated is without note or comment.

Is it the Douay version; do the Roman Catholic clergy object to the introduction of schools into Ireland?—I believe the Roman Catholic clergy disapprove of persons professing that religion, reading the Bible; I may be misinformed.

Is not the Bible read in that school in the city of Cork, with which you are acquainted; are you aware of any catholic schools from which the Bible is excluded?—I neither know whether they do use it, or whether they do not use it; but if I were to guess, I should say they do not use it.

Are there any schools in the southern parts of Ireland, with which you are acquainted, in which the education of industry is at all connected with the education of letters?—I think that there are schools established now from private funds, and by private individuals, in which they connect some branches of industry.

What branches?—Spinning generally, and making straw hats.

Are those introduced in any school whatever, within your knowledge?—Upon my word, I cannot say.

Are you acquainted with any school for boys, in which the education of industry is connected with the education of letters; in which there is any thing taught in the way of trade?—I am not acquainted with it; but there may be schools upon a small scale.

Do you not think, that if it were necessary to publish banns to effect catholic marriages as well as protestant, would not a great many marriages be prevented?—I must candidly say, I do not think there would. In addition to the expedient which I have before proposed for throwing more capital and circulation in the country, I would advise one expedient, which I think would be found of great utility; that is, to enable

Gerrard Callaghan,
Esq.

(1 July.)

persons obtaining presentments at assizes, to raise money on the faith of those presentments, to enable them to execute them; because I have known, since this intense distress appeared in the south of Ireland, instances of persons not being able to execute works, or executing them on very disadvantageous terms, for want of the means; and in cases of public works executed by contract, I think such a facility as I allude to would cause more competition, and get the work done upon easier terms.

Robert Owen, Esq. called in; and further Examined.

Robert Owen,
Esq.

YOU said, that in your travels through Ireland, you saw a large portion of the peasantry in want of productive employment, and very miserable?—I never before, in any country, saw so many persons without useful occupation, or who appeared to be so ill provided with the common necessities of human existence and comfort.

Had you reason to think that these people would work if they had productive employment?—I believe they would be not only willing, but most happy, to be regularly employed.

Do you think that they could be so employed as to supply their own wants, and to add to the wealth and strength of the empire?—I think they could, and that there must be a great and grievous error somewhere, when even one of those who wish to work is unprovided with employment.

Do you think the government could adopt any effective measures to promote this object, which you think so necessary and desirable?—I have no doubt whatever that they possess all the means that are requisite for the purpose.

What are those means?—The power of borrowing six or eight millions of capital at about three and a quarter per cent interest, and of lending it to the landed proprietors of Ireland at three and a half or four per cent, on security as good as any that can be offered for the repayment of any loan whatever.

In what manner would that capital be employed?—In giving direct productive employment to the peasantry of Ireland, under such circumstances as could not fail to improve their character, prove beneficial to all classes, and permanently secure the prosperity of the empire.

Are you of opinion, that the interest of the capital to be so employed, could be regularly paid to the government?—I think the interest could be regularly paid, and that a sinking fund could be also provided to redeem the capital itself in less than sixteen years.

What would be the consequence if the interest could not be paid, or the capital redeemed, as you have stated?—That, even under this (as it appears to me) very improbable supposition, it would be greatly for the interest of the empire to advance the money.

Why do you think so?—Because it would at once quell the present disturbances, speedily give new habits of order and industry to the people, and provide schools for the training and education of the rising generation; because it would be the means of creating much more than six or eight millions of new property, and because it would save the British empire a much larger sum that must be expended in keeping the people in subjection, while they continue in their present state of wretchedness.

Are you of opinion, that if government agreed to lend six or eight millions at three and a half or four per cent, the landed proprietors and other persons who could give reasonable security for the repayment, with interest, of the money that might be advanced to them, would be inclined to borrow upon such terms?—I think they would, but if they were not so inclined, government would be exonerated from the charge of withholding from the Irish proprietors the means of giving employment to the population.

Would not the employment of capital by government in building bridges, constructing harbours and making roads, be equally beneficial?—These works, if judiciously undertaken and conducted, would be useful, but not nearly so advantageous to the people or the country, as the measures which I recommend for the regular and permanent employment of the population.

Why so?—Because the employment afforded by the former is temporary, and the success of the works doubtful and distant, whereas in the other case the labour of the people would be so directed as to enable them to provide immediately for their own wants, and also to increase the capital which employed them.

Would not your plan of relief require much time to put it into execution?—It will require some years to perfect the plan; but I am prepared to submit measures by

Robert Owen,
Esq.

(1 July.)

by which all those who are at present unemployed in Ireland would be soon set to work, and although their first proceedings would be necessarily rough and imperfect, yet it would be far better that they should be so employed, acquiring habits of industry and knowledge, than continue, as at present, idle and in mischief.

Would you find the means of employing all who are now without work?—I consider it a great error in government to allow one person, willing to labour, to remain idle.

Do you then, in opposition to the opinions of the modern political economist, consider it to be the duty of government to adopt effective measures to keep the people well employed?—I do; and in my opinion, nothing is so erroneous, or practically so injurious to the state and to individuals, as the theory of those who would tie up the hands of government from doing a positive good, from the fear of a hypothetical evil.

Wherein consists the essential difference between the plan you recommend and the plan which has been hitherto practised?—The difference is this, the plan I propose is one which goes at once to effect all the great objects of human society, setting aside the various circuitous and necessary measures, by which, at present, so very large a portion of capital, skill and industry is misapplied and wasted. The desire of society is, to give good habits and good dispositions; the new system, in the most natural and direct manner, secures these important results by the establishment of infant schools; society wishes to impart the most useful instruction to the individuals, in order to render him of the most value to himself and to the community; this object the proposed plan will effect in a very superior degree, by communicating knowledge to the young mind, through the medium of sensible signs, and by conversations between the instructors and the instructed; a method by which experience has proved, that more accurate and useful intelligence can be conveyed to the human mind in a week, than can be given by the present modes of education in a year. It is also the desire of society to ensure habits of industry and application; these will be secured in the most effectual manner, under the proposed new arrangements, by early instruction in the most useful occupations, while the skill and industry of the individuals, as they grow up, will be applied to produce the most beneficial results. It has also ever been the wish of mankind to remove intemperance and vice from society; the plan proposed provides the most effectual means of excluding these evils, and of rendering it a pleasure to all to acquire and practise the contrary habits. It is also an object of much consideration how health can be attained and secured; under the arrangements recommended, the most direct methods can be taken to give the best constitution to those individuals who shall be trained within them, while those innumerable circumstances will be excluded, which in common society affect the health of so large a portion of its members; in short, the distinction of the new arrangements consists in this, that they *exclude* whatever has tended to *injure* men in their individual or collective capacity, and *combine* whatever *experience* has *proved* to be conducive to their well-being.

What security, in your opinion, could be given by landholders in Ireland, that the money borrowed at four per cent would not be paid to the mortgagors who had lent that money at six per cent?—The loan might be under the management of commissioners, and those commissioners might withhold the payment of any portion of the money, except as it was expended upon the land of those proprietors in giving positive work to the peasantry and labourers.

Do you think, from the evidence you have heard in this room, that the landed gentry in Ireland would be much inclined to pledge their estates, unless they had the complete management of the money so borrowed?—I know there are many who would be willing to borrow money in the way I have mentioned, who have no other object than to give productive employment to their tenants, and those immediately about them.

Do you think that is the situation in which many landholders in Ireland are?—

I think there is a considerable number in that situation.

Would it be desirable that the whole capital of the country should be paid into the hands of government, to be applied according to your plan?—It is not intended by these measures that the whole capital of the country should be put into the hands of government, but that government should have the means of lending a moderate capital to such individuals, as would employ those who are now unoccupied.

But if an arrangement of one thousand persons, on the plan proposed by you, would be greatly conducive to the wealth and resources of the country, would not

Robert Owen,
Esq.

(1 July.)

the distribution of the whole people of the country, into similar establishments, be greatly beneficial?—I think so.

Must not the success of your plan depend very much upon the individual under whose control it is placed?—I think not; it appears to me that the new arrangements might be more easily conducted than the present arrangements of society.

Would it not be some time before the managers of these concerns would learn all the improvements which it is your intention to suggest?—It would require some time to instruct them to be perfect in their different parts; but the individuals who are now in common society, accustomed to the ordinary transactions of business, might very shortly be instructed so as to conduct these new establishments with considerable success.

Do you not think, that upon the present form of society, the division of labour and of employment is more beneficially conducted than it could possibly be under your system?—I think not; there is no kind of comparison. Under the arrangement proposed, we should have the advantage of combination and of division, without the inconvenience of either.

The Right honourable *Maurice Fitzgerald*, Knight of Kerry, a Member of the Committee; Examined.

Right Hon.
M. Fitzgerald.

ARE you acquainted with the present state of any part of the south of Ireland?—With my own county, and I have seen something of the county of Limerick lately.

What is the condition of the peasantry in the county of Kerry, and the county of Limerick, with reference to employment; do you conceive there is adequate employment for the population of the country?—There is nearly a cessation of employment on the part of proprietors.

Is there a considerable proportion of the population of the country whom you consider now to be without the means of employment?—I can say, that nearly the whole mass of the population of the country are without labour, except for themselves.

Were you in the south of Ireland during any part of the late distress in that country?—Yes, I was; I was there in the month of May.

Do you consider the cause of that distress to have been any want of food in the country, or of the means of human sustenance, or in the want of employment, which precluded the possibility of food being purchased by the peasantry?—There was a very extensive failure of the potatoe crop, which is the usual food of the people; but, taking in the entire of the south of Ireland, there was a sufficiency of grain to substitute, if there had been the means of purchasing it.

Was not the price of corn at that time particularly low?—It was very moderate.

Is there, on the part of the peasantry, an anxiety to procure employment?—I cannot conceive a greater avidity for employment than they manifest.

Is that eagerness for employment manifested by a disposition to work at extremely reduced wages, and to go to distant countries, or distant parts of Ireland, in search of employment?—By both: I have known the peasantry of Kerry go into the county of Limerick to work for the merest subsistence that could be obtained, at the lowest possible wages; offering to work for 2*d.* a day; any thing that would purchase food enough to keep them alive for the ensuing twenty-four hours.

Have you known any instances of the execution of work by task, in which the people have exhibited a disposition even to over-work themselves, to the injury of their constitution, for the purpose of obtaining remuneration for their labour?—I have understood, from persons employed in conducting public works, that there is that disposition to work beyond their strength.

Have there been public works to a considerable extent carried on within your notice?—There has been a very extensive line of mail-coach road executed within a few years, and persons flocked to it from very great distances; persons walked, before the hour of commencing work, four, five, six and seven miles to obtain employment, and walked back again at the end of the day's work.

Is the general system, in those parts of Ireland with which you are acquainted, to pay labourers in money or to pay them in account?—The general practice is to pay them in account by land.

Do you think that that system is satisfactory to the labourer himself, or that the work so given is given as freely as work paid for in money?—I think that the labourer adopts that mode of payment with reference to the food of his family, a portion

*Right Hon.
M. Fitzgerald.*

(1 July.)

portion of land being necessary for that purpose; I do not think they have had much experience any where in the south, of the better mode of dealing by money.

Do you conceive that labour could be had at a lower rate, if paid for in money, than when paid for in account?—Certainly.

Has the labourer any mode of thoroughly satisfying himself, when he is paid for his labour in account, that he is fairly and justly dealt with?—I believe that the labourers keep their own accounts with very great accuracy, but whether that shall lead to a just settlement, must depend very much upon the character of their employer.

What is the state of agriculture in the parts of Ireland with which you are acquainted?—The system is very bad in the south; very injurious to the soil, very much calculated to exhaust it, and accordingly the greater portion of ground that lay under agriculture during the late war has been very much deteriorated, and will require many years before it can be restored to the same degree of fertility that it possessed at the commencement of that period.

What description of implements are made use of by the peasantry of the south, in agricultural occupations, are they of an improved description, or are they rude?—I think the use of improved implements of industry is extending very much in the south; generally, there is a very good description of cart and dray, and improved ploughs are now very commonly introduced.

Do you think there is an adequate supply of implements of industry for the profitable cultivation of the land in the south?—By no means; what I describe are chiefly used by gentlemen, and by a very few farmers; the general description of implements is very bad; however there is the model in the country, and if there were more funds to purchase them, I am sure the farmers would very gladly adopt the improved implements.

Do you attribute the want of active employment in the country to the inadequate diffusion of improved agricultural implements?—Very much; for I think there is a great disposition, especially in the farmers, to improve their system, under a conviction that it would be for their advantage.

Do you conceive that the introduction of an improved system of agriculture would give more extended and more profitable employment in the way of human labour in the south?—It would lead to a better direction of labour, not more extended, but more productive.

If the lands in the south were cultivated according to the improved Scotch or English system, do you think more lands would be employed in their cultivation than at present?—No, I do not; I consider the quantity of human labour to be very much in the ratio of the barbarousness and ignorance of the system.

Then, if an improved system of agricultural labour were introduced, do you conceive the effect would be to throw a considerable portion of the peasantry out of employment?—The capital employed remaining the same, I think it would.

Then do you think that the improvement of the agriculture of the country would be generally useful, or the reverse?—I consider that the increase of the productive power of labour would be useful.

How would you propose to employ the population, who, in that event, would lose their usual means of occupation in agricultural industry?—I can hardly conceive any adequate means of employment (in the exhausted state of the country as to capital) from internal resources.

Do you conceive, that if capital could be introduced by artificial means into Ireland, that it could be profitably invested there, either in agriculture or manufactures?—I should suppose so; where you have a fine climate, a fertile soil, an industrious skilful people, a great command of water, and many other natural advantages.

Then do you conceive there are any peculiar circumstances, in the present state of Ireland, which prevent the natural investment of English capital in that part of the united empire?—I should think the great bar is, the insecurity of life and property.

Do you connect the present disturbances in the south of Ireland with the inadequate means of employing the people?—In a very great degree. An engineer who was sent to the most disturbed part of the county of Cork, informed me that he very soon pacified them by an extended employment of the people, in making a new line of road; and by inquiries amongst the farmers, and persons most experienced in the actual state of the country, I was convinced, that if employment was sufficiently extensive, the turbulent habits of the population would be altogether abandoned.

Do you conceive that any increase might be given to the profitable industry of

Right Hon.
M. Fitzgerald.

(1 July.)

the south through the medium of the linen trade, and the cultivation of flax?—I consider the south of Ireland extremely well adapted to the coarse manufacture of linen.

Are the women acquainted with the manufacture?—In parts of Kerry it is very extensively practised: the women are extremely skilful spinners; the country produces very fine flax, and at one period a very extensive export trade in linen existed in a part of Kerry.

In what barony?—In the barony of Corkaguinny, in which Dingle is situated.

Has that trade diminished, or extended?—It has diminished very much within the last forty years.

To what causes may such diminution be attributed?—To the non-enforcement of the linen laws, and the frauds practised in the manufacture.

The Committee have in evidence, that the linens brought to sale in the south are not made up with that regularity which distinguishes the linens of the north; do you attribute that difference of practice to any neglect on the part of the officers of the Linen Board in the south, or to any and what other cause?—The laws are much more strictly enforced in the north of Ireland.

Are there not officers in the south, inspectors of markets or other officers, connected with the Linen Board, whose duty it is to enforce those laws?—I do not think there are an adequate number of officers, and I do not think the gentlemen of the country are sufficiently aware of the importance of the linen manufacture, nor do they sufficiently exert their authority to enforce the laws; in fact the linen manufacture is considered in a very secondary light in the south of Ireland, but the whole body of the gentry in the north, feel that there is a great national interest involved in the improvement of the fabric. Forty years ago the linen that was marked "Dingle," (as exported from that harbour) was received in every market of Europe with great favour; the frauds committed in the preparation of the thread, and the subsequent weaving, are so considerable, that the article has altogether lost its character in the general market.

Do you conceive, in the present state of the peasantry of Ireland, that the markets, with reference to linen, can be left to the ordinary interest of the parties, without regulation?—I am afraid not.

Is there any deficiency of implements on the part of the people which impedes the progress of the linen manufacture?—The species of wheel used in the south, when purchased by the people themselves, is very bad; it is too small and ill-constructed. Those distributed by the Linen Board are regulated as to size, and are very improved articles; and it is to be hoped that the people will be soon convinced of the great advantage they would derive from the use of such improved implements.

You are a member of the Linen Board?—I am.

Do you conceive the distribution of improved wheels by you in your neighbourhood, has been productive of benefit to the spinners of yarn?—Of very extensive benefit; I am convinced that the diffusion of the improved article, without reference even to the positive good it brings to the parties employed, is a great advantage.

What description of reel is commonly used in the peasant's cottage in the south of Ireland?—If they purchase them themselves, it is almost always the common hand-reel.

Can you inform the Committee whether it is possible, with the common reel, to prepare linen according to the regulations of the market?—I believe not; accordingly thread is brought of all lengths to market, and is in so irregular a state, that it is almost impossible to ascertain its value accurately.

Is it possible for a weaver in the south to purchase yarn in the same manner as in the north, upon the credit of the market, or without a close personal inspection?—I believe there is hardly any case in which a purchaser would venture to close without an examination of the article; frauds are committed in the mode of making up, independently of the clumsy way in which it is done: one means of correcting the frauds in the south would be, to enforce the sale strictly in the markets; at present it is carried on in the fairs; they are sold indiscriminately in all places.

By the law, as it stands, is there any power of erecting linen markets at the public expense in counties?—There is a power in grand juries to present a limited sum; I think 300 *l.* in the county town, but not in any other place.

Do you conceive that the erection of markets in more remote parts of the county, would have a beneficial effect in the encouragement of the manufacture?—Very good; I think it is a great desideratum.

You

425
 Right hon.
 M. Fitzgerald.

(1 July.)

You have stated, that the implements used in manufacture are of an unimproved description; is there a deficiency in the number of implements as well as a deficiency in their character and nature?—Yes.

Is there an anxiety on the part of the female peasantry to become possessed of better implements?—Very great; and even on the part of substantial farmers.

Have you known this shown by instances where wheels were hired at considerable expense, as compared with their money value?—In some districts it is a very common practice to hire wheels and reels, and I believe they pay an unreasonable rate, in most cases, for them.

Copy of a Letter from James Patterson, Esq.

“ Sir,

Kilrush, May 31st, 1823.

“ ENCOURAGED by the erection of the fishery piers on this coast, two persons registered themselves as fish-curers, viz. Francis Coffee, on the 10th of March, at Liscannor, and James Shannon, on the 26th of April, at Seafield, on the 26th instant. I had a request note from the former to attend at his curing-house on the 28th, to inspect seven hundred and sixty ling, and nine hundred and ninety-six cod; I accordingly attended, and have great pleasure in saying, that a finer parcel of fish I never beheld: I at the same time registered twenty-six row boats. From thence I proceeded to Seafield to see what was going on there, where, I am sorry to say, I found the fishermen very desponding; they had an immense quantity of fish, offering at $1\frac{1}{2}d.$ per dozen; but few purchasers. Mr. Shannon not having as yet begun to cure at Liscannor, agreeable to a previous arrangement made with the fishermen, Mr. Coffee pays $3\frac{1}{2}d.$ per dozen: it would tend greatly to promote this speculation if some little additions were made to the bounty in lieu of the drawback on the salt, which they find very difficult to recover, principally owing to the great distance to any custom-house, and the difficulty of travelling bad roads. I send herewith the production bounty debenture, as the curer has but a small capital. I hope the board will order payment with as little delay as possible; every little encouragement that can be given this speculation in its infancy will greatly tend to promote it; and I have no doubt, in a short time, it will become very general, and productive of great advantage to the country.

“ I am, Sir, &c. &c.

“ Commissioners of Fisheries.

(signed) James Patterson.”

Mercurii, 2^o die, Julii 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

James Roche, Esq. called in; and Examined.

James Roche,
Esq.

(2 July.)

WHERE do you now reside?—In London.

What is your situation in London?—I am commercial secretary to some of the cities of Ireland.

Do you act on behalf of any of the commercial bodies?—I do.

Which are they?—The Chamber of Commerce of Limerick; the Chamber of Commerce of Sligo; and the committees of merchants of Cork and Youghal.

Before you fixed yourself in London, where did you reside?—In Ireland. I resided in Cork.

Did you reside there for many years?—For twenty years.

What was your situation in Cork?—Banker.

Do you consider yourself to have had the means of judging of the state of the paper currency within the time that you resided in Ireland?—Indeed I should suppose I had. No one had better opportunities, both from my own direct experience, and from the means of observation I had with others.

Has there been, within the period of your observation, any considerable alteration in the state of the circulating medium of the south?—A very considerable alteration.

In what did that alteration consist?—In the withdrawing from circulation all the notes that had been issued by private banks on their failure.

When did that take place?—In May and June 1820.

Do you conceive that there has been any increased issue from the Bank of Ireland commensurate to the quantity of paper withdrawn, by the failure of the country banks?—By no means commensurate; there certainly has been an increased issue, and a considerable one in that particular denomination of notes.

Can you form any calculation as to the state of the circulation now, when compared with the state of the circulation of the highest issue?—I think it scarcely can

James Roche,
Esq.

(2 July.)

exceed one-fourth at present. I know that in 1813 I reckoned that there were in circulation in Munster from 1,300,000 *l.* to 1,500,000 *l.*

Does that include the circulation of bank paper, or do you mean that there was that amount of local paper in circulation?—I speak of local paper; I confine myself to that; but then that varied, because in winter it was much larger than it was in summer.

When you say one-fourth, do you mean the whole circulation, or a fourth of the local paper?—Of the whole circulation. I consider that there were about from 1,300,000 *l.* to 1,500,000 *l.* in circulation in 1813; and I believe there are not now above 400,000 *l.* to 500,000 *l.* at present.

Can you inform the Committee how many banks failed at that time?—Two stopped payment in Cork; one has since resumed; two in Limerick, one in Clonmel, one in Waterford, and two minor ones; one in Kilkenny, and one in Carrick-on-Suir.

All in the same year?—All almost within a month.

Was there not also a failure of a very considerable bank in Dublin?—Yes.

Has this failure caused an entire alteration in the mode of transacting mercantile business in the south?—Yes, it is completely altered. The custom during the existence of those banks was, to make advances to the merchant, in order to enable him either to execute a commission, or to speculate according to his own views.

What do you mean by advances, discounting paper?—Sometimes by discounting, and sometimes by credit on his books; by allowing him to draw to a certain extent.

What was the mode of remittance from the merchants to their correspondents?—Either as they sold at home, or consigned abroad, they paid the produce of what they sold at home, or gave bills for what they consigned abroad.

What is the present mode of transacting business?—Now they come forward with their different bills, and pass their bills as any merchant would here on the exchange.

Then the circulation of bank notes is in part re-placed by the more active circulation of bills of exchange?—I should apprehend that even there there must be a considerable diminution, rather than an increase.

Is there a limitation of the time to which the bills run?—Yes.

How long?—From two to three months.

The practice is not more than that?—No; two months is the usual period; I know now they do not extend beyond two months.

You have stated that the circulation in the winter was much more considerable than any other period of the year; from whence did that increased issue of paper in winter proceed?—From the necessity of making advances for purchases to be made by merchants during the active season of business.

Is that the time of the year when the principal purchases are made?—That is what we call the active and busy season of the year; the produce of the land then comes into operation.

In point of fact, is not a great part of the agricultural produce, in the shape of corn, brought into the market altogether at that time of the year?—From September till February and March.

Are you aware whether the circumstances of the Irish peasantry enable them to preserve their corn, or whether they are forced, from the necessity of the case, to bring that corn into the market all at once?—They are compelled, from their necessitous situation, to do so.

Have they any barns or farming establishments that enable them to reserve their corn, if they think advisable to do so, for the conclusion of the season?—Very few of them have.

Do you conceive that the circumstance of the poverty of the peasantry, which thus forces them to bring all their produce into the market at once, has a tendency to produce any considerable vicissitudes in price?—I think it places them at the mercy of those who have the means of purchase.

Do you conceive that there is a sufficiently active communication between the Bank of Ireland and the merchants of the south, so as to produce a fair issue of the paper for mercantile purposes?—I do not think there is any communication at all between the Bank of Ireland and the south. I know there is not.

Has it ever occurred to you, the establishment of either branch-banks of the Bank of Ireland in the south, or any other banking establishments, would contribute to restore the commercial interests of the south to full activity?—I have often thought that the example given by Scotland, both in establishing branch-banks, and in making corporate banking bodies, would be very beneficial to the south of Ireland.

By

427

James Roche,
Esq.

(2 July.)

By corporate banking establishments, do you allude to the chartered banks of Scotland, the British Linen Company, &c.?—In some degree. And I also allude to what I believe now is adopted by the legislature; that any number of persons can associate and establish a bank.

That is a late act; are you aware whether any establishment has taken place under that act?—I believe none.

Do you consider that that act is in itself a specific remedy, without introducing the principle of the Scotch chartered banks, whereby the individual partners are only responsible for the amount of the sum subscribed?—I believe it is the apprehension of their becoming generally reponsible that prevents many people from establishing banks; and if they were established on the ground of being confined to whatever sum they would register, a number of persons would embark in them *in commandito*, as it is termed.

Do you think there is a capital in Ireland which could be advantageously invested for the benefit of the public, and for the benefit of individuals in such establishments, provided the law allowed their formation?—As far as I am acquainted with the individuals of the south of Ireland, I believe there is very little capital. I know of no sufficient source that could provide such a fund, except the Bank of Ireland.

Is any capital required to establish a company of that sort?—There must be some capital, I should think, either original or created.

Would not a very small capital do?—Yes, I am very sure a small capital there would do.

Do you mean a small capital for the establishment of provincial banks upon those principles?—A small direct capital; but then they would of course be expected to issue notes on their responsibility, or, at least, on the credit of their prudence.

But they would actually employ a very small capital?—I believe that they would be bound to contribute but a small capital.

Do you mean by that, a joint stock company, or a branch from the Bank of Ireland, that would be bound to subscribe but a small capital?—A joint stock, as far as capital is required; a branch of the national bank would require none.

Do you imagine that a joint stock company would require but a small capital to establish banking in any of the provinces in Ireland?—I believe their object would be to increase the present quantity of circulating medium; therefore for that purpose, either they should contribute considerable capitals, or else they should make considerable issues on their credit.

Would not their credit depend, inasmuch as they are only bound for the amount of subscription, very much upon the quantity subscribed?—In a great measure, no doubt.

Would not the confidence of the public rest exclusively, when they were not bound, with their private fortunes, but only for the amount of subscription, upon the amount of that subscription?—I think not exclusively. I think there would be confidence result in the public mind on the prudence of the persons, as well as the amount of property invested in the establishment.

Suppose, for instance, ten persons subscribe 5,000*l.* each, which would be 50,000*l.*, in your opinion, they not being responsible for more than their subscriptions of 5,000*l.* each, would that be sufficient to give him credit in the province of Munster to issue 200,000*l.* worth of notes?—Yes; I think it might go to that extent.

Whatever amount of capital might be subscribed to such bank, would it not be immediately lent as a commercial capital, for the purpose of carrying on commercial concerns?—I presume so.

It could not be profitably lent to contributors, unless it was lent upon interest?—It would be defeating their object if it were not.

In addition then to their own capital, they would lend all the notes which they threw into circulation?—They would.

Keeping only the reserve which would be necessary to answer the usual demand?—To be sure.

Did the failure of the country banks follow or precede the fall of prices?—I believe it was in consequence of it, and that it added to the effects. I know it was in consequence of it.

Do you think the economy and use of bank notes is greater in the south of Ireland now than it used to be?—No doubt of it.

Are you at all acquainted with the clearing-houses?—I am.

James Roche,
Esq.

(2 July.)

Is any thing of that kind established in the south of Ireland?—During the existence of banks in Cork, every day we exchanged.

Do they not now?—There are only two; and I believe they do exchange every morning.

But in London there are many modes of economizing the use of money; are the same modes adopted in the south of Ireland?—No; the principle is wholly unknown there, and the practice they cannot follow.

If corporate banks were established upon the principle, as contemplated in a former question, do you think the circulation would be very greatly increased?—I think it would be increased to the full proportion of the wants of trade.

Is there not a supply of bank notes now fully equal to the wants of trade?—I hear the merchants say not.

If there were not sufficient circulating medium in the south of Ireland, would not metallic money naturally flow there, or Bank of Ireland notes, till they had sufficient for all the purposes of commerce?—The value of produce sold certainly must flow into the country in some form or other; but there is a great difference in the facility which a person possessed of credit has of waiting for a good market, and of being forced to a bad one.

If the corporate banks were to issue much more paper than what is now in circulation in the south of Ireland, do you not think that such money would be depreciated, and consequently would be returned for payment?—As compared with the value of produce at the present day, of course it would be depreciated.

But as compared with the standard of gold and silver, in which they would be bound to pay?—Upon my word I should rather think not; but it is a question that requires a little consideration.

Is not England the principal market for produce in the south of Ireland?—Yes, four-fifths of it, or more.

That is paid for chiefly in bills on England, is it not?—Chiefly on England; and any person that has credit can find facilities of negotiating his bills.

Then as far as the sale of Irish produce extends, there must always be a circulation introduced into the market exactly commensurate with the price?—Yes.

Then do you anticipate that there would be any effect result from the establishment of branch or chartered banks, except the facility that it would afford to merchants of waiting for a market?—That facility would not be confined to the merchants' bills; it would extend to all persons as well as to merchants; it would become quite general, and have an extensive effect through the whole country.

It would only have that effect, as extending the credit system in place of a more direct ready money system, which prevails under the present state of the circulation?—It would give life to trade.

Do you conceive, that if the law allowed of the establishment of chartered banks in the south of Ireland, that such establishments would be likely to take place?—There would, probably, exist the same obstacle to such establishments, as to the investment of capital at all in our unfortunate country.

What are the obstacles which you allude to as impeding the investment of capital in Ireland?—The want of security, from the state of the public mind, and from the habitual neglect of law in the country; the difficulty of recovering any debts.

Do you apply that generally to Ireland, or to any particular part of it?—I confine my own observations to the south; I pretend not to judge of any other part.

You have had considerable pecuniary arrangements to make in the south of Ireland, have you not?—Many millions.

In those arrangements have you experienced this difficulty of recovering debts?—That depended upon the times. In war-times, and when money credit was easy, I found little difficulty; afterwards I found every difficulty.

Referring to the mode of administering the law in Ireland, have you formed any difficulty in the execution of process, after judgment has been obtained in courts of law?—Very great difficulty; in fact, so much as to discourage any attempt to enforce payment.

Can you inform the Committee from whence you conceive that difficulty to arise?—The causes are so very general, that it is very hard indeed to assign a particular one; but I believe the most direct one might be traced to the sheriffs and sub-sheriffs, and their immediate agents. More to the sub-sheriffs than the sheriffs.

Is

Is it that the sub-sheriffs are corrupt?—I believe they are generally not much depended on.

Do you not know that the sub-sheriff cannot act two years in succession?—He finds a substitute, with whom he agrees.

It is not then from any thing wrong in the system, but from a general corruption in the individuals?—I cannot say that the law is wrong, but the practice of it is.

Have you known the same sub-sheriff continue in office several years, or somebody acting on his behalf?—Yes.

To what county do you refer?—I have been acquainted with several counties of Ireland.

In what county did you ever know such a practice to exist?—I cannot say I have known it, I have heard of it rather. I have heard of it in the county Tipperary.

Do you conceive the alteration in the currency to have had any effect upon the means of employing the poor?—Yes, I believe it has.

How has it operated in preventing the employment of the poor?—There is not so much business done in general trade as there was, or would have been, if credit had been easier and more open to the merchants, either for speculation or commission.

Is not the high-sheriff responsible for all the acts of the sub-sheriff?—Yes.

If that is the case, and he is responsible, if the individual is a suitor in the court, do you think there is much danger of loss following?—It is very difficult to adduce proof of the thing, though a person may be morally convinced of its existence.

If the thing is so general, it would surely be possible to point out some instance?—I believe there are many instances which have occurred.

Generally speaking, the sheriff of a county is a person perfectly responsible for the duty that he has to perform?—He is presumed to be so, but the difficulty of proof is very great.

Do you mean to say, that the difficulty in recovering money advanced by yourself and others to individuals, arises exclusively from the misconduct of the sub-sheriffs?—By no means.

Does not the misconduct of the sub-sheriffs arise from the previous indisposition, or inability of the borrowers of money, to pay?—In a great measure, I am sure of it; there is sometimes want of will, and sometimes want of power, and sometimes both combined.

In cases of neglect of duty by a sub-sheriff, what difficulties are there in the way of proceeding against him?—I am not aware there is any special difficulty, except the difficulty of producing proof.

Have you ever applied to sub-sheriffs in Ireland for specialties, in order to enable you to proceed against individuals indebted to you?—Any thing that I ever did in that way was always through my solicitor.

Have you, through your solicitor, applied for specialties?—Yes.

Have those demands been generally complied with, or refused?—I do not recollect meeting with any difficulty in the application.

Does your observation apply to the sheriffs of cork?—Yes, they are generally granted in Cork.

On what grounds have you formed your estimate of the amount of notes in circulation in the year 1813, and at the present time?—In 1813, I know what the amount of my own issue was; and by what the amount of my own issue was, and by comparison of the result of our daily exchange, I could form a pretty accurate estimate of the general amount.

And at the present time how do you estimate the amount, at the present moment?—From the observation which fell under my own eyes when I was there, and by what I heard from persons connected with existing banks.

Your brothers are proprietors of one of the existing banks in the city of Limerick?—They are.

If there was any deficiency of circulating medium now in the south of Ireland, would not the banks actually now subsisting furnish the quantity required?—The public have not the same confidence in them that they had, and therefore the notes which are issued by the bank do not meet the same extent of circulation that they formerly did, nor in fact sufficient extent of circulation to repay them for the cost of the establishment; they do not issue to the same extent.

You confine yourself to the south of Ireland?—Yes.

Do you conceive that there is at the present moment any difficulty felt by the merchant

James Roche,
Esq.

(2 July.)

merchant in obtaining advances upon his paper, or other security?—The banks in the south of Ireland now allow no credit; that is, they allow no one credit at any bank to enable him to draw, and to be debited for his credit on the banker's books.

Can any merchant at Cork get his bills discounted by bankers at Dublin?—He must be well known for that purpose, or his correspondent must be well known who endorses his bill.

Does the circulation of Bank of Ireland notes bear a large proportion to the country paper at present?—It much exceeds it.

In what does the principal circulation of the south of Ireland almost exclusively consist?—I suppose four-fifths of it are Bank of Ireland.

What difficulty exists in obtaining a sufficient quantity of Bank of Ireland paper for all mercantile purposes?—They must be known themselves, or known through their correspondents in Dublin, to obtain any credit in Dublin at bankers; none but a resident can expect to obtain it; and they cannot have that facility of obtaining credit there, as if there was a branch of the Bank of Ireland in the south; a resident branch.

Do you then conceive, that by the establishment of a branch of the Bank of Ireland in the south of Ireland, that such establishment would have better means of ascertaining the credit and respectability of merchants who might apply to them for advances or discounts?—Naturally.

If there be a balance due on either side, between Dublin and Cork, how is it settled, by transmission of bills?—Cork transmits bills to Dublin; any person in Cork who finds a difficulty in the transmission of his bills in Cork, endeavours to establish a correspondence in Dublin, and through his correspondent he negotiates his bills in Dublin, and receives in return Bank of Ireland paper.

If there were, then, any deficiency of circulation in Cork, could they not, by the means you have just described, obtain a plentiful supply of Bank of Ireland notes?—If the merchants in Cork had sufficient credit in Dublin they could.

If there be this want of credit, how could the circulation be supplied, either by branch banks residing in Cork, or the establishment of any new company?—At present the Cork merchants find great difficulty in negotiating their bills; very few, except about half a dozen, the most prominent in character, can do it.

Does not that difficulty arise from the want of credit?—They are unknown, though they may have good orders. The merchant in Cork, if there were a resident banker, would go and show the order that he had received from Liverpool or from London, and on the strength of that order the banks would make him a sufficient advance till they are repaid by bills, which, on acceptance, he would be enabled to draw.

Is there not a sufficient facility for any merchant to make that correspondence known to the Bank of Ireland?—I am very sure the Bank of Ireland would not advance a farthing on such credit.

Then how would a branch of the Bank of Ireland in Cork be authorized to do so?—I do not know whether they would, but they would have more knowledge and confidence.

Do you not suppose that a branch of the Bank of Ireland would be governed by the same principles as govern the Bank of Ireland?—I suppose so.

Then how would the establishment of a branch bank improve the condition of the merchants there?—The merchants have a difficulty in obtaining the negotiation of good bills in Dublin; and I believe, that if a branch were established in Cork, they would have no difficulty in obtaining good bills to be discounted.

Do you then imagine that the establishment of a branch bank at Cork would lead to giving the merchants of Cork the same facilities with regard to discount, which are at present enjoyed by the merchants of Dublin?—I suppose it would.

Do you think that merchants of good credit in Cork find any difficulty whatever in getting their bills discounted now?—I believe they do; I know they do.

Why?—Because the banks that are established are not willing to issue their notes on the grounds I have just stated.

If bank notes do not remain in circulation, do you attribute that to a want of credit in the bank, or to too large a quantity of their notes being in circulation?—It is to the diffidence created by the failure of the banks.

Then, generally speaking, your idea is this, that a branch of the Bank of Ireland established at Cork, would be very useful and very desirable, on account of the superior credit it would treat with there?—That is my view.

And the caution with which they would act?—I suppose they would act on the principles which have so much raised their character in Dublin.

James Roche,
Esq.

(2 July.)

To what amount do you think the circulation of the south of Ireland could be increased, by the establishment of branch banks or corporate banks?—In 1813, it was about 1,500,000*l.*; 500,000*l.* now performs the functions of those 1,500,000*l.*; this disparity is too great; but I think that 750,000*l.* would now, without much loss, represent as much value as 1,500,000*l.* in 1813, and would be sufficient for the present wants of trade.

When you say that 750,000*l.* represents the same value now as 1,500,000*l.* did in 1813, do you not mean, that the same quantity of commodities would now sell for half the price?—Yes.

Then, if the same quantity of commodities were sold for one-third of the former price, 500,000*l.* would be of the same value as 1,500,000*l.* in 1813?—Yes.

How do you know that either the one or the other sum is the adequate sum to circulate the commodities of the south of Ireland?—I only judge by inference, because at present I know the merchants complain, that they are compelled to precipitate the sale of their goods, whereas if there was a greater capital and a greater circulating medium in the country, they would be enabled to wait for a better market.

If there were now 750,000*l.* in circulation, might not the merchants use the same argument, and say, if there were more in circulation they could get a better price for their goods?—I only speak of what I consider reasonable limits.

By what rule do you limit the amount to 500,000*l.* to 750,000*l.* or to any other amount?—By a rule which, according to me, would give the merchant a reasonable profit in his business, and enable him to accomplish his contracts.

The bank of Cork receive lodgments of money from individuals?—Yes.

Do they allow interest for those lodgments?—They are debarred by law from doing so.

Do they in point of practice?—I believe they occasionally did, but I know not generally.

Were those lodgments made to any considerable amount at any time?—Very large lodgments.

Do you conceive that an alteration of the law in allowing interest to be paid by the bankers in Ireland, as it is allowed to be paid by bankers in Great Britain, would have a beneficial effect?—I do think it would.

Is there a disposition on the part of the people of Ireland to make lodgments, either in the banks to which you refer, or in any other establishments where they can obtain interest for them?—There certainly was when there was confidence in the banks.

Has the establishment of a saving bank ever been introduced in the city of Cork?—I contributed much to introduce it there.

Have the lodgments been considerable?—Very considerable; in the year 1820 it amounted in a round sum to 50,000*l.* which was very considerable.

By the rules of the saving bank the lodgments are confined within particular limits?—They are.

If the great banking establishments of the country were allowed to pay interest for the sums lodged, do you conceive that persons in a higher class of life, who cannot lodge money in the saving banks, might be induced to lodge it in the ordinary banks of the country?—I have no doubt of it.

Are you aware of any considerable establishments of schools in the south of Ireland, either parochial or otherwise?—I know in the city of Cork there are many; one a very large one.

Is there in any of those establishments the education of industry combined with the education of letters?—Not practical industry.

Is there any establishment for the instruction of the young peasantry in agriculture?—No.

Do you conceive that such an establishment would be beneficial?—From all I have seen and heard of on the continent, I should suppose it would.

What establishment do you allude to on the continent?—The establishment of Professor Fellenberg, in the canton of Berne.

What establishment for education do you allude to in the city of Cork, when you state there is a great school there?—There is one in which there is room for one thousand scholars, and where I know at present there are about three hundred.

By whom was that establishment formed?—Under the direct patronage of the late Roman Catholic bishop of Cork, and in some measure under my own.

By whom is it managed?—By young men who devote themselves exclusively to it.

James Roche,
Esq.

(2 July.)

Are they ecclesiastics?—They do not officiate in other respects as ecclesiastics; they take certain vows, but they are not priests.

Are you aware whether the Roman Catholic clergy in the south of Ireland have in other places endeavoured to establish schools?—I know they are very anxious for it, none more so.

Is there any system of religious instruction introduced in the school in the city of Cork, to which you allude?—There is; it forms the integral part of the education.

Is any portion of the scriptures read in the course of instruction in that school?—The moral parts are extracted, but not the doctrinal, except in the catechisms.

Do you understand the objection which has been stated to exist on the part of the catholic clergy, to the introduction of the scriptures in the schools, to be applicable to the doctrinal part and not to the moral?—Their opinion is, that what has confounded the highest intellects is not fit to be put into the hands of children.

Do you know whether any objection has been made by them to the introduction of the practical moral parts of scripture, as part of the course of instruction in the schools?—They have so little objection to it that it forms a part of all their establishments for education.

You are not aware that it is excluded from any school?—The bible itself is not read, but all the moral parts are extracted in their prayer books, as the doctrinal parts are in their catechisms.

Robert J. Wilmot Horton, Esq. a Member of the Committee, was Examined.

R. J. W. Horton,
Esq.

HAS the attention of the King's government been of late directed to the subject of emigration from Ireland to the colonies?—It has.

What have been the circumstances which have induced government to turn their attention to that subject?—Perhaps the most convenient mode of answering that question will be, to give in a paper which was read at Mr. Goulburn's to Lord Ennismore, Mr. Becher, Sir Nicholas Colthurst, &c. respecting emigration from the south of Ireland.

[The same was delivered in, and read as follows:]

“The government, desirous of alleviating the inconveniences of excessive population in Ireland, and at the same time of giving to the provinces of Canada an accession of emigrants capable of improving the advantages afforded by those colonies to active and industrious men, has taken into consideration the expediency of providing for the transport and location of a certain number of settlers, on a system which will best ensure their immediate comfort and their future prosperity.

“And as it has been found that many persons have of late years, in the hope of bettering their condition, been induced to remove from Ireland, and seek an asylum in a foreign country, suffering many immediate privations from the want of assistance, and having no security for their future comfortable settlement, there can be little doubt that this offer of government, to convey such as may be willing to emigrate to a colony in which many of their countrymen are happily settled, and when they have the certain prospect of maintaining themselves in comfort, and being useful to the empire, will be gladly embraced.

“Although it is probable, that on experience of the good effects of affording these facilities, the government may be induced to extend the scale in future, it is thought prudent to attempt nothing more this year than can certainly be carried into effect, with a due regard to the comfort of the emigrant, and to public economy in the conduct of the measure; and accordingly it has been ordered, that means shall, with as little delay as possible, be provided in the harbour of Cork for conveying to Quebec such persons, not exceeding five hundred in number, as are willing to become settlers in the province of Upper Canada.

“To ensure as much as possible the welfare of the emigrants, and in order that every necessary arrangement may be made for their comfortable settlement upon their lands, a gentleman, who has long been a resident in Upper Canada, has, at the request of the government, undertaken to superintend the embarkation of the settlers, and to make the necessary previous dispositions for their reception in Canada, and their location upon their lots.

“He will proceed immediately to when all applications are to be addressed to him in person; and as, from the present advanced state of the season, no time is to be lost, no person can be received who shall not be ready to embark on the first day of July next.

“To all who may be disposed to emigrate from and who may be accepted by the superintendent, the government will afford a passage to Canada, and will convey them to their lands free of expense; provisions will be found them, and they will be furnished with medical assistance during the whole of their voyage and journey. Upon their arrival

R. J. W. Horton,
Esq.

(2 July.)

arrival on the tract destined for their settlement, every male emigrant above the age of eighteen years, and under forty-six, shall receive a location ticket or order for seventy acres of land; the utensils necessary for a new settler shall be furnished them at the public expense; and they shall receive provisions for one whole year after they shall have taken possession of their lands.

"As an inducement to industry and good conduct, an additional tract of thirty acres shall be reserved, adjoining to each grant of seventy acres, of which the right of pre-emption, upon the terms which will be explained by the superintendent, shall be preserved for ten years to the proprietor of such adjoining tract. The terms upon which such additional grant will be made, with the mode and time of obtaining the patent for the first grant, the fees of office to be paid upon the same, and the conditions which will be annexed to it, are all particularly set forth in a paper printed by authority, which will be furnished by the superintendent to each settler, and of which the terms will be rigidly fulfilled by the government; and such conditions as are incumbent upon the party, will require to be, in like manner, punctually performed.

"As it is extremely desirable that the assistance thus offered by government shall be afforded only to persons capable of becoming useful settlers in a new colony, it is to be understood that no person shall receive land under this system who shall be, at the time of his emigration, above the age of forty-five years; and, in the present instance, it is deemed prudent to confine the selection to persons having more than three children, under fourteen.

"It is scarcely necessary to mention, that the province of Upper Canada, in which a settlement upon such advantageous terms is thus offered at the public expense, possesses every recommendation of climate and soil which an emigrant can desire; and the certainty and ease of acquiring a comfortable and independent livelihood there, is abundantly proved by the present condition of persons who have for some years past been emigrating to that province from all parts of the United Kingdom, many of them without any aid from the public, and at the same time wholly destitute of private means; others under the superintendence, and with the assistance of the government; but now upon terms so fully calculated to obviate every difficulty attending the removal to a new country.

"It is the desire of government that the offer should be urged upon none who are not willing to accept it, as it is a principal object of the measure to prevent the inconveniences of a casual and undirected emigration, which in too many cases ends in disappointment to the emigrant, while it is useless, if not rather prejudicial to the empire; and if the experiment now intended to be made, shall prove satisfactory to the parties, and beneficial to the public interests, it is probable that the same system may be pursued to a much more considerable extent in future years; dependent, however, upon the good conduct in the colony of those who may be anxious to avail themselves of the present offer, as well as on the future claimants for similar assistance, whom it is out of the power of government to remove in the present year."

Then I should also propose to give in a memorandum, which is alluded to in that paper, which is to be given to each settler going from the south of Ireland.

[*The witness delivered in the same, which was read as follows:*]

"MEMORANDUM of the Terms on which Government has agreed to convey a limited number of Settlers from Ireland to Upper Canada, under the Superintendence of Mr. Robinson, and to locate them upon Lands in that Province; and also of the Conditions upon which such Lands shall be granted.

"Such emigrants as the superintendent shall accept shall be conveyed from the place of embarkation in Ireland to their lands in Upper Canada wholly at the public charge, and provisions shall be furnished them during their voyage, and for one whole year after their location upon their respective lots.

"Such farming utensils as are absolutely necessary to a new settler shall also be found for each head of a family, or person receiving a grant of land.

"No person above the age of forty-five years shall be conveyed to Upper Canada at the public expense, unless under particular circumstances, in the discretion of the superintendent; and no person above that age shall receive a grant of land on his arrival in the colony.

"Every male, above eighteen years of age and not exceeding forty-five years, to whom a certificate shall have been given by the superintendent that he was accepted by him as an emigrant settler to receive lands in Upper Canada, shall on his arrival receive a location ticket or order for seventy acres of land, in such part of the province as the lieutenant-governor, or person administering the government, shall assign. And in order that such emigrants as shall be industrious and prudent may have an opportunity of extending their possessions, and providing for the respectable maintenance of their children, an additional tract of thirty acres, adjoining every such grant of seventy acres, shall be reserved by the crown ungranted for the space of ten years after the location of the lot of seventy acres, to afford an opportunity to the proprietor of such larger tract, of purchasing the same within the period, by paying the moderate sum of 10*l.* sterling.

"The order or location ticket for seventy acres, to be given to the emigrant upon his arrival, shall express certain duties of settlement and cultivation, the same, in proportion,

R. J. W. Horton,
Esq.

(2 July.)

as are required by the government to be performed on lands granted in Upper Canada to other settlers; and the period to be allowed for the performance of such duties shall be also expressed in the order.

“ So soon as the settlement duties shall have been performed, the party may obtain his patent, on paying the expense of preparing the same, which it is supposed will not exceed 2*l.* 10*s.* sterling on each grant.

“ Each tract of seventy acres so granted, shall be subject to the payment of an annual quit-rent to the crown of 2*d.* per acre; to be paid half-yearly, in such manner, and subject to such penalties and forfeitures, in the case of failure, as shall be expressed in the patent; and the same quit-rent shall be charged also upon the grants of thirty acres. It shall, however, in every case be in the option of the proprietor to redeem the quit-rent at any time, on payment of twenty years purchase; and with respect to the original locations of seventy acres, no quit-rent shall be chargeable until five years have expired from the time of the location.

“ As it is intended that all persons who shall be thus assisted by the government in removing to Upper Canada, shall be actual settlers in the province, it is necessary it should be clearly understood, that if the conditions of cultivation and improvement, to be specified in the location ticket, shall not be performed within the period prescribed, or if the person locating any lot under the present system shall, before receiving his patent for the same, withdraw from Upper Canada, and remain absent for the space of six months without sufficient cause, to be allowed by the lieutenant-governor of the province, the land so assigned to such person may be given to another applicant.”

This paper having been read to the gentlemen whom you have named, was the scheme one which met with their approbation and assent?—It distinctly met with the approbation and assent of the gentlemen to whom it was read; and subsequent to the arrival of the superintendent in the south of Ireland, we have received eight or ten communications from him, all of them tending to show the extreme anxiety that has been shown by the population of the south of Ireland to avail themselves of this, and the uniform conviction in the minds of the magistrates and residents, of the advantage which even this emigration, conducted upon so small a scale, was likely to prove in that part of Ireland; and I shall take the opportunity of mentioning here, that it having been stated that persons of capital have been invited to emigrate, I have to repeat what I have already stated in the House of Commons, that this is not the fact. But I have this day received a letter, in answer to one from me, assuring me that no person whatever who was possessed of any capital has been invited to take advantage of this opportunity; and it has been restricted to persons who are entirely destitute of all means of subsistence.

Have you received any communications from Ireland which lead you to imagine that such an experiment as that which is now in the course of being tried, was necessary?—I am not aware that any further communications were received; but it was generally inferred from the presumed state of Ireland, that such emigration, which in the first instance might be supported by the general funds of government, might be desirable as an example; and that, when properly understood, it might be followed up to any extent by private means, should such private means be forthcoming, or could such private means in any degree be connected with the advance specifically made by government for the purpose; subject to re-payments of capital, with interest on money so advanced: and for the purpose of explaining more particularly that part of the subject, I should wish to give in this printed tract, which, perhaps, would be the most convenient mode of bringing it before the Committee. In giving in this outline of a plan of emigration to Upper Canada, which was never published, but was printed at the commencement of the present year, and was an enlargement of a proposal submitted to the Agricultural Committee of 1822, I beg to remark, that this “plan” was chiefly considered with respect to its possible application to the circumstances of England, where the parochial rate was considered to be a fund which might conveniently be charged, if the parish consented to the arrangement, with the repayment of any money advanced by government on loan for the purposes of facilitating emigration; but it will be observed, that it is equally applicable to Ireland and Scotland, provided that a fund equally satisfactory could be pledged to government for such re-payment, whether that fund be of a public or local character. And I should also wish to observe, that Colonel Talbot and Mr. Robinson, the attorney-general of Upper Canada, (brother to the gentleman who has undertaken the superintendence of the present emigration from the south of Ireland) have chiefly contributed the local information respecting that country upon which the calculations have been founded, that have governed the formation of the estimate lately submitted to parliament.

"Outline of a Plan of Emigration to Upper Canada, (printed, but not published, Jan. 1823.)

R. J. W. Horton,
Esq.

(2 July.)

PLAN.

"SUPPOSING it were deemed expedient for government to advance money to parishes upon the security of the poor-rates, for the express and sole purpose of facilitating emigration; the government undertaking all the details of the experiment; the money to be lent at four per cent, and to be repaid by annual instalments, or, in other words, by a terminable annuity, calculated at four per cent. Would it be worth while for the parishes to accept such a proposition, supposing that a sufficient period were allowed for the repayment of such terminable annuity?

"For example:—A parish is desirous of sending off one hundred labourers, those labourers finding no adequate employment, are anxious to emigrate, feeling that their present existence is a burthen to the parish, and a discomfort to themselves. The government agrees to convey them to Upper Canada* for 3,500*l.* being at the rate of 35*l.* per man, undertaking the whole arrangement, provided that the parish rates be charged with an annuity of 225*l.* per annum for twenty-five years; such annuity for such a period being equivalent to the repayment, by instalments, of the capital so advanced, with annual interest upon the same at four per cent. As the presumed present cost of maintenance of these hundred labourers, by the parish, is calculated at 1,000*l.* per annum, or 10*l.* per man, it will at once be perceived, that the measure proposed will lead to an immediate annual saving of 775*l.* per annum, or of very nearly four-fifths of the present expense. The same principle is applicable to women and children, at a diminished rate of annuity; it being estimated, that while the charges which must be incurred on account of each man cannot be safely stated at less than 35*l.* the cost of the removal and maintenance of each woman will amount to about 25*l.*, and of each child under fourteen years of age, to 14*l.* (vide Appendix A.)

"The details of the expense of removing the families of paupers from an English port to the place of location or settlement in Upper Canada, and of keeping them until they shall be in a condition completely to provide for themselves, will be found in Appendix A.

"The expense of removing them from the parish to the port must, of necessity, be without the range of an estimate.

"This plan must be accompanied by an act of parliament, which should enact, that all persons taking advantage of this facility of emigration should give up for themselves and children, present and future, all claims upon parochial support.

"The success of these proposed settlers in Upper Canada can be warranted upon grounds of perfect certainty, as the tract (vide Appendix B), which was laid before the Agricultural Committee of 1822, will satisfactorily demonstrate to any person who will peruse it with attention. That tract was drawn up by Colonel Talbot, who has himself resided in the province of Upper Canada, from its original settlement under the auspices of Lieutenant Governor Simcoe, with very little interruption, to the present day; and whose authority cannot be questioned, he having been intrusted by the British government with the settlement of that populous and highly improving extent of territory along the banks of Lake Erie, now called the "Talbot Settlement;" and the concluding paragraph of the tract subjoined in Appendix B. will show the extent and character of the success which has attended that experiment.

"That a corresponding degree of success will attend the present one, if an opportunity be afforded for it, there can be no reasonable doubts entertained. It will only require judicious measures on the part of the government for the general arrangement of the transfer, and location of the emigrants; and as far as the principle of estimate can be applied to any public undertaking of this nature, a reference to Appendix A. will demonstrate that the expense of the necessary measures will be covered by the money proposed to be advanced, and with every consideration for the comfort and interests of the emigrants, which is fairly compatible with his situation as a pauper in his own country; and which country, by the terms of the proposition, he himself must be desirous of leaving†.

"The financial part of this proposed measure is of the most simple nature; the issuing of terminable annuities to be purchased at the market price, according to their respective periods and the rate per cent.

"The Commissioners for the Reduction of the National Debt may be authorised, for example, (if no more eligible mode can be suggested similar in effect, but more advantageous in principle) under an act of parliament to be passed for this specific measure, to purchase these annuities from the parishes. The parishes, therefore, in theory at least, may be considered as receiving the money so advanced to them for an annuity, and then paying it over to government, in consideration of the removal of the paupers, on the terms and subject to the qualifications proposed. Thus, for example, the parish of A. agrees to pay an annuity of 2*l.* 5*s.* for twenty-five years, in consideration of receiving the sum of 35*l.* which sum the parish immediately pays into the hands of the government, who undertake to remove B. a pauper, in the manner proposed.

* It will at once be perceived, that this system of emigration may be equally applied to any other colony. Upper Canada has been selected, as being the one, in the opinion of the proposer of this measure, by far the most eligible, whether with reference to the economy of the public expense, or to the probable advantage to the emigrant, and consequently that colony in which the experiment may be the most advantageously tried.

† It is not considered necessary to incumber the present statement with remarks upon the means of supplying any deficiency, or the manner of disposing of any surplus of the money calculated to accomplish the object.

R. J. W. Horton,
Esq.

(2 July.)

"It is proposed for the simplification of this measure, that the annuity for which each parish is responsible should be made payable to the county treasurer, and recoverable in the same manner as the county rate; consequently, the annuity due from all the parishes in each county would be paid in one collective sum by the county treasurer into the Exchequer. This plan, of course, would not be in any degree compulsory; the arrangement must be made between the parochial authorities and the paupers before the parish could be in a situation to avail itself of this assistance. That impediment once removed, nothing would oppose its immediate execution. The removal of the paupers to the port appointed for embarkation would necessarily be, as already observed, without the range of an estimate, and must be governed by local circumstances, occasioning a small addition to the expense. There would be this advantage in the measure (if the doctrine of those be right, of which there can be no doubt, who contend that the administration of relief to the able bodied poor was never contemplated by the statute of Elizabeth) that it would be a justification of those who direct the application of the parochial rates, for withholding from individuals rejecting this boon, all assistance that is not absolutely necessary. It has long been universally admitted, that this presumed claim of the able-bodied pauper upon parish relief, has been and is the principle obstacle to the restoration of the poor-laws to their original standard, inasmuch as the granting such relief has been the greatest aberration from their true character and spirit.

"It will at once be evident that the machinery of this proposed measure would be equally applicable to Ireland and Scotland; provided any funds local, or otherwise, could be satisfactorily pledged to government for the payment of the proposed annuity. And if it should be considered desirable, with reference to the application of this measure to Ireland and Scotland, that the annuity shall be of longer duration, thereby diminishing its annual amount, such alteration could at once be effected. Thus, for example, if a district should wish to export one hundred labourers, the cost being 3,500*l.* if the duration of the annuity be extended for forty-two years, the annuity which that district would be called upon to pay would be 173*l.* 8*s.* On this calculation for the different countries, each man would be permanently provided for by an annuity of 2*l.* 5*s.* per annum for the term of twenty-five years in England, and 1*l.* 14*s.* 8½*d.* for the term of forty-two years in Ireland and Scotland; each woman for 1*l.* 12*s.* in England, and 1*l.* 4*s.* 9*d.* in Ireland and Scotland; each child under fourteen years of age for 17*s.* 11*d.* in England, and 13*s.* 10½*d.* per annum in Ireland and Scotland; the two latter being governed by the same relative proportions*.

"It is not deemed necessary on this occasion to enlarge upon the permanent as well as present advantages which would be afforded to the agricultural interests by the adoption of this measure, which cannot be characterized as a temporary expedient, framed upon imperfect data, and at variance with the soundest principles of political economy.

"It is considered as unquestionable, although this measure is not in the slightest degree compulsory, that the poor man who offers his strength and energy as a labourer, but who, finding no demand, or at least no adequate demand for his services, is compelled to receive "parish relief" for the preservation of his own existence and that of his family, will accept this opportunity of bettering his condition, by laying the foundation for future independence, with eagerness and gratitude; when sufficient time has elapsed, and proper pains been taken to make him understand the true nature and character of the change that is proposed for him.

"It is equally considered as certain, that parishes will anxiously accept this facility (as far as their own concurrence is required) of relieving themselves, at a slight annual expense, of any present and pressing redundancy of population; and also of securing for the future the effectual prevention, supplied by this measure, for any accumulation of labourers, whose services they may be incapable of remunerating.

"It is at once evident that this system of emigration could be made immediately applicable to Ireland and Scotland, provided that money was raised there for the purpose by local assessment, or that a specific tax was pledged for money lent for that purpose by the government.

"Although the periods of twenty-five and forty-two years have been taken for the duration of the annuities in England and Scotland respectively, of course the only effect of curtailing the period will be, to increase the quantum of the annuity; but as the object was to relieve present distress, it was considered that the longer periods would be the most desirable.

"It has not been considered necessary in the "outline" to enter into many details, which, however, have been duly considered, and are all prepared for exposition. It is proposed that one hundred acres should be allotted to each father of a family, and perhaps smaller proportions to single men; that certain restrictions should be imposed with respect both to cultivation and alienation; that after the termination of a definitive period, perhaps five years, the proprietor should pay a certain annual quit-rent of very small amount, out of which should, in the first instance, be defrayed the expense of the patent, which would not exceed 2*l.* upon a grant of one hundred acres: the remaining quit-rent might be appropriated to the purpose of local improvements, such as roads, &c. and a provision be added for an optional redemption of the quit-rent on the payment of a moderate sum.

"Although the agricultural population will be more immediately benefited by this measure, yet in the case of a redundancy of manufacturing population, it will be found perfectly

* These fractional divisions might for convenience be reduced to even money.

437

R. J. W. Horton,
Esq.

(2 July.)

applicable; for it must be remembered that the casual emigration to Upper Canada, which as far as it is gone has succeeded so well, has been principally supplied by the manufacturing population, which class, upon general reasoning, must be deemed the least suited for the experiment.

“ Although it may be argued, that there can be no actual redundancy of population as long as the waste lands in the mother country remain uncultivated, yet no person conversant with such subjects can contend that such redundancy does not now, virtually at least, exist; in other words, that there are not many strong labouring men, for whose services there is no adequate demand, and who cannot be employed upon any productive labour that will pay the expenses of production; and as in all civilized countries population must be dependent upon property, it is absurd to theorize upon erroneous “ data,” which do not admit that unquestionable proposition. And if any person should feel alarm, that under the operation of such a measure too great a proportion of the agricultural population might be abstracted, they may be assured that at this moment many economical processes in husbandry which would save human labour, and much agricultural machinery which is kept in abeyance, would be immediately applied, to the manifest improvement of the condition of the agriculturalist and of the wealth of the country, provided that a danger no longer existed which now exists with full preventive force, viz. that of throwing out of employ a still greater number of the agricultural population.

“ It is scarcely necessary to observe, that this measure can be suspended or limited at any time: but in point of fact it has that suspensive power within itself; for whenever there should exist at home an adequate demand for the services of able-bodied men out of employ, whether from the increase of productive industry, or from the demands of war, or from any other cause, there would be no longer a temptation to emigrate.

“ It is also observed, that with such a system in regular and effective operation no inconvenience could ever again result to this country from a temporary stimulus being given at any time to the population which could not permanently be sustained. To use the metaphor so commonly employed, it would be a safety-valve by which the inconvenient excess of population could always be carried off imperceptibly; and it must not be forgotten, in a comprehensive view of such a system, that the pauper, for whose labour no remuneration can be afforded at home, will be transmuted by this process into an independent proprietor, and at no distant period will become a consumer of the manufactured articles of his native country. Nor, on the other hand, can any calculable period be assigned for the termination of such a system, until all the colonies of the British empire are saturated, and millions added to those who speak the English language, and carry with them the liberty and the laws and the sympathies of their native country.

“ Such a system would direct the tide of emigration towards parts of the British empire, which must be considered as integral, though separated by geographical position. The defence of these colonial possessions would be more easily supplied within themselves, and their increasing prosperity would not only relieve the mother country from pecuniary demands that are now indispensable, but that prosperity in its re-action would augment the wealth and the resources of the mother country itself.

“ These observations are therefore respectfully pressed upon the attention of those who have the means to give effect to this measure, which is not one of compulsion in any part of its arrangement, but which is considered to be founded upon sound and incontrovertible principles, and to combine the advantages of some alleviation of present evils with the permanent benefit of the empire at large.

Appendix (A).

	£.	s.	d.
Total expense from an English port to Quebec	7	-	-
Total ditto - from Quebec to his location	6	15	-
Flour for twelve months, at 1 ½ lbs. per day	4	-	-
Barrel of pork	2	14	-
Utensils, &c.	3	-	-
A cow	4	10	-
	27	19	-
Extra expenses	2	1	-
	£. 30	-	-

“ The above estimate was laid before the Agricultural Committee, in 1822; other calculations have been made by persons well informed on the subject, which agree very nearly in the result. In one of these the expense is stated thus:

	£.	s.	d.
A ship of three hundred tons will carry two hundred grown persons and water-casks and water included, the charge per head will be about	3	-	-
Contracts can be made to supply a sufficiency of provisions of all kinds necessary for the voyage, at 1 s. per day, reckoning the voyage at sixty days	3	-	-
The government would be required to fit up the births, which would cost for each person	2	-	-

R. J. W. Horton,

Esq.

(2 July.)

	£.	s.	d.
To cover all extra expenses attending the voyage to Quebec	-	-	2
On arrival at Quebec, landing baggage, one day's provision, and embarking in the steam-boat for Montreal	-	-	7
Passage to Montreal, including provisions	-	-	12
Expenses from Montreal to Lachine	-	-	5
Passage in boats from Lachine to Kingston, provisions included (proportionably less to any intermediate place)	-	-	2
For each person, for one year, one barrel and a half of flour	-	-	2
One barrel of pork	-	-	2
Other necessities	-	-	2
A cow	-	-	3
Farming utensils, &c.	-	-	5
	£.28	5	-

" In this calculation the quantity of flour allowed is much smaller than in the preceding, in which $1\frac{1}{2}$ lbs. per day is considered to be not more than enough for a male adult; and no allowance is made for the expense of removing the individual from Kingston to the place of settlement, which, with respect to those new townships around Lake Ontario, may be stated at 1*l.* 10*s.*; and with respect to those back from the shores of Lake Erie, at 3*l.*

" The following statement as to the expenses of the voyage is made by a person of much experience in the Quebec trade:—' The average charge for the conveyance of one person from London to Quebec, including victualling for the voyage at the usual allowance for troops, is about 5*l.* per head. The rate for passage only has varied from 1*l.* 10*s.* to 3*l.* for each person; the ships being fitted at the government expense, and the passengers victualled at an extra charge of 1*s.* per day. By the act of parliament of 57 Geo. III. c. 10, the owners of ships are required to lay in provisions and water for twelve weeks passage. The cost of the casks is very considerable; they are of no value at Quebec, and cannot be brought home without great expense, so that they are almost an entire loss. If the voyage be short, the surplus provisions sell for barely their first cost, and there is a great loss by waste. Upon the average, however, of these calculations, the expense of victualling is about 3*l.* per head, and the passage about 3*l.* per head also; though probably, at the most favourable season of the year, taking in each ship the number allowed by act of parliament (two adults for three tons, and three children under fourteen years of age to an adult), they might be conveyed and victualled at 5*l.* each, including all expenses whatsoever.'

" From these various data it may be safely concluded that the charges specified in the first estimate for transporting the settler and his family from the port in England to his lands in Upper Canada, for the purchase of a cow, farming utensils, and provisions for a year, would be covered by an advance of 30*l.* for each man, 25*l.* for each woman, and 14*l.* for each child. But besides these enumerated charges, there are other inevitable expenses; taking it for granted that the persons to be removed will be literally paupers, having no means of their own, and that the emigration is to proceed on a very large scale. In the first place, they ought to have something beyond their ordinary clothing to meet the first winter; this they could not procure for themselves, but it could be purchased in this country for a very small sum. Then they must have some bedding, of however coarse a kind, for their voyage. There must be an agent to receive them at Quebec; supply them with provisions, and make arrangements for their immediate transport up the country; another must be resident in Lachine, near Montreal; another at Kingston, and another must be at hand to receive them at their place of settlement, to show them their lands and to supply them with provisions and utensils. Temporary buildings must also be erected in central situations in the new settlements, for the reception of the emigrants on their arrival, and to shelter their families and their baggage until they have erected habitations on their respective lots. The superintendence of these arrangements might, perhaps, be conveniently entrusted to the commissaries already stationed at the several military posts in both provinces, who might form depôts of provisions for the settlers in the same manner as for the troops under their charge, and hire waggons and boats for conveying them; by which means a saving would be made of the pay of superintendents, except at the new settlements, where no commissaries are stationed. If it is thought that this duty could not properly be thrown upon the commissariat department, superintendents must be appointed, whose pay certainly could not be less than 10*s.* sterling per day.

It must also be considered that it would not be safe, and certainly not humane, to send a ship full of emigrants upon an Atlantic voyage, without any medical attendant. Accidents would happen, and sickness might very probably occur among so many women and children, and in the absence of proper assistance, many cases of great hardship might arise. To provide a surgeon or physician for each ship would cost about fifty or sixty pounds. After the arrival of these poor people in Upper Canada, about two thousand of them will be settled together in each new township, without any means for the first year to pay for such medical assistance as they might require. Accidents frequently occur among the emigrants in felling timber from their inexperience; and their houses being at first mere temporary sheds, they are exposed to the risk of contracting diseases from the change of climate during the first season, while they can offer no inducement to any medical man to take up his residence among them. It seems therefore to be almost necessary to provide a physician

439

R. J. W. Horton,
Esq.

(2 July.)

cian to each township, (which is a tract of ten miles square,) for one year at least; perhaps for two. It must also be taken into consideration the detentions that will frequently occur. The father or mother of a family may be taken ill at Quebec, or elsewhere, on their journey, and the whole family may be delayed some days, perhaps weeks, in their progress; during which time they must be fed at the public expense, and this will be in addition to the charge in the estimate, as the intention is to give them provisions for a year after they are actually located in their lands, which indeed will be necessary. It is believed that, with strict economy in the management, these additional expenses would be covered in a manner that would ensure the comfort of the settler by an addition of 5*l.* to the sum to be advanced for each man, leaving the charge for women and children as before; the estimate would then stand thus:

For every man	-	-	-	-	-	-	-	£.35	-	-
Every woman	-	-	-	-	-	-	-	25	-	-
Every child under fourteen years of age	-	-	-	-	-	-	-	14	-	-

"The apparent disproportions between the charge for a man, and those for women and children, arises from the necessity of placing to the account of the former at the head of the family all expenses for the family collectively, such as superintendence, medical assistance, purchase of provisions, a cow, farming utensils, &c.

"With respect to children, it is necessary to be considered, that those above fourteen are reckoned as adults in the act of parliament 57 Geo. III. c. 10. which regulates the number of passengers in proportion to a ship's tonnage. The expense, therefore, of transporting such children to Quebec, and the subsequent charge for conveying them to their lands, and feeding them, will probably be nothing less than for adults; and to prevent a deficiency of funds, children of both sexes, above fourteen and under eighteen years of age, must be estimated for at 25*l.* that being the charge for women, which includes nothing but the supposed expense of transport and provisions for the individual; and boys above eighteen, as they may be considered as men with respect to the articles to be furnished to them, must be charged as male adults."

Appendix (B.)

"Remarks on the Province of Upper Canada. By the Founder of the "Talbot Settlement."

"Position and Extent of Upper Canada."

"THE province of Upper Canada commences at between 73 and 74 degrees of west longitude, its western extremity being at about 84°. Its southern boundary extends from 45° 20' to 41° 40' of north latitude. To the north it may be said to advance as far as the pole. That portion of its territory, which is now in course of settlement, is computed to be not less than seven hundred miles in length from east to west, having a mean breadth of one hundred and fifty miles, or thereabouts.

"The whole of this extensive tract of land possesses peculiar advantages in point of situation; the River of St. Lawrence, and Lakes Ontario, Erie, and St. Clair, furnishing a continued and easy water communication along its entire southern line. There are several other navigable lakes and rivers which intersect it in a northern direction, all of which are connected with the St. Lawrence.

Climate, Soil, and Productions.

"Climate:—The climate of Upper Canada is considerably milder than that of the lower province, and the winter shorter in the same proportion. In both these respects it improves as you proceed to the westward; so much so, that although the frost generally sets in in November at the Point au Bodet, on Lake St. Francis, its eastern extremity, and continues in that neighbourhood till the middle of April, it rarely commences on the shores of Lake Erie before Christmas, when it usually disappears between the 25th of March and 1st of April. The greatest depth of snow around Lake St. Francis is about three feet, which gradually diminishes to eighteen inches on the borders of Lake Erie. From York on Lake Ontario upwards, neither black cattle nor sheep require housing during the winter; and the new settler, with the addition of a small quantity of straw, can keep his stock on the tender branches of the trees felled by him in clearing his land, until the return of spring. On a comparison with the climate of Great Britain, the heat in the summer months is somewhat greater, but never oppressive, as it is always accompanied with light breezes. There is less rain than in England, but it falls at more regular periods, generally in the spring and autumn. The winter cold, though it exceeds that of the British Isles, is the less sensibly felt, in consequence of its dryness, and seldom continues intense for more than three days together, owing to the regular fluctuation of the wind between the north-west and south-west points. It may be observed that the winter season is the most favourable to land carriage, as the roads then admit of sledging in all directions, which is a very expeditious mode of conveyance, and attended with but little draft; so that one horse or ox can in this manner easily draw double what he can upon wheels. It is hardly necessary to state that in a country so overspread with timber there can never be a deficiency of fuel. As the forests disappear the climate improves.

R. J. W. Horton,
Esq.

(2 July.)

Soil:—Upper Canada is blessed with as productive a soil as any in the world, and it is easily brought into cultivation, as will appear when the agricultural system there pursued is noticed; the nature of the soil may be invariably discovered by the description of timber it bears. Thus, on what is called hard timbered land, where the maple beech, black birch, ash, cherry, lime, elm, oak, black walnut, butter-nut, hickory, plane, and tulip tree, &c. are found; the soil consists of a deep black loam. Where the fir and hemlock pine are intermixed in any considerable proportion with other trees, clay predominates; but where they grow alone, which is generally on elevated situations, sand prevails. This also happens where the oak and chesnut are the only trees. These sandy soils, though naturally unfavourable to meadow and pasture, are found to produce the brightest and heaviest wheats, and can, with the assistance of gypsum, which abounds in many parts of the province, be made to bear the finest possible crops of clover and Indian corn. In moist seasons the clays furnish the greatest burthen of grass. Perhaps there does not exist in any quarter of the globe, a country of the extent of Upper Canada, containing so small a quantity of waste land either of marsh or mountain, yet there is not any deficiency of water; for independently of the numerous rivers and streams which flow through the country on every side, good springs are universally found either on the surface or by digging for them.

Natural Productions:—The forests abound in excellent timber, adapted to all uses, and furnish a considerable supply both to the West Indian and British markets. That which is chiefly exported consists of the oak and fir. The timber most esteemed in Upper Canada for building and farming purposes, is the white oak (very similar to the English); the yellow pine, a sort of deal which cuts up into excellent boards, as does also the tulip tree, which there grows to an immense size. This latter timber is by many considered the best for weather boarding, from its superior facility in taking paint, and being of the poplar tribe, it is less liable than most other woods to accidents from fire, as it never blazes; the oak and hickory are principally used for ploughs, cartwheels, &c.

The black-walnut, cherry, and curled maple work up into durable and beautiful furniture of all sorts. From the maple, the settlers, by a very simple and easy process of tapping, obtain in a few days a sufficient quantity of sugar to supply their families for a year; many, indeed, manufacture a considerable surplus for sale. The bark of the oak, hemlock, and black-birch, is employed in tanning; but that of the first is preferred for this purpose. Butter-nut bark affords a durable brown dye for woollen, cotton, and linen-yarn. Soap may be made in any quantities from the wood-ashes, with the addition of a certain proportion of tallow or grease of any kind. Plumbs, cherries, crab-apple (which latter yield an excellent preserve), gooseberries, currants, strawberries, raspberries, grapes, cranberries, walnuts, chesnuts, and filberts grow wild in the woods, where game is sufficiently abundant; consisting of red-deer, hares, pheasants, woodcocks, snipes and quails, with many other birds, good for the table; in which enumeration should not be omitted the wild pigeon, which, at certain periods of the year, migrate from the westward in flocks of such magnitude as surpasses all description, and are excellent eating.

In the Talbot Settlement wild turkeys are met with in great numbers, often from fifty to one hundred in a troop. The borders of the lakes and rivers also contribute their quota of the feathered race, such as swans, geese of different kinds, together with the many varieties of duck, teal, and widgeon, most of which have a delicious flavour; the waters themselves swarm with excellent fish of various sorts, many of which are unknown in Europe, in proportion as the country is explored. Salt springs are discovered, which, when properly worked, it is expected will yield an adequate supply of salt to the province; there are also mineral springs, some of which have great efficacy in removing rheumatic and scorbutic disorders. Of limestone and clay for making bricks there is no want. Ironworks are likewise established in several situations; and from the quantity of ore found, they promise to be exceedingly productive.

Grain, &c.:—The grain grown in Upper Canada consists of spring and winter wheat, oats, barley, rye, buck wheat, and Indian corn, the last of which is a most important article of consumption. Peas are the only field pulse cultivated there; the summer heats being considerably too great for beans of green crops. There are potatoes, turnips, pumpkins, clover (red and white) and timothy grass. Both flax and hemp succeed remarkably well, and the latter will probably, at no very distant day, become an object of the greatest importance both to the colony and the mother country. Even at present a very considerable saving to government might be obtained in encouraging the growth of this article in Upper Canada, where it would be manufactured into cables and cordage for the naval establishments on the lakes, at half the expense it now costs, owing to the distance of transport.

Fruit and vegetables:—All the fruit and herbs common to the English kitchen garden thrive well in this province, and several of the former, which cannot in all seasons be had in perfection without forcing in England, succeed there in the open air; such as peaches, nectarines, apricots, grapes, and melons, all of which are excellent in their kinds. There is also a great variety of apples, pears, plumbs, and cherries of the finest quality which are known to European orchards. The stone-fruit is also raised on standards.

Agriculture:—Course of crops: the soil being of such a nature as not to need manure, the same attention is not there paid to the regular succession of crops as in Great Britain. After wheat, which is generally harvested in the month of July and beginning of August, rye can be sown on the same ground in the autumn to advantage; the rye-crop is frequently laid

R. J. W. Horton,
Esq.

(2 July.)

laid down with clover or grass seed, which, unless the farmer is pressed for ground, will continue to furnish good meadow and pasture for four or five years, otherwise it is ploughed up before winter, and in the spring put into pease, spring wheat, Indian corn, barley, oats, or buck-wheat, all of which answer very well; the two first rather benefiting than impoverishing the land. The leaves and tops of the Indian corn likewise afford excellent winter food for cattle, particularly milch cows. After any of these latter crops wheat may be sown again; potatoes and turnips succeed well upon newly cleared land as a fast crop, potatoes being put into the ground with a hand-hoe, from the beginning of May till the middle of June; turnips are sown about the first week in August, after the greatest heat has subsided, and at which time the fly has disappeared, simply requiring the harrow. It is to be understood that the new land is never ploughed for the first and second crops; timothy is the grass most cultivated, as it affords a large burthen of the best hay, besides good after-grass; however it is best mixed with clover, to which it serves as a support, and prevents matting.

"Duties of a new settler :—On application made to the superintendent of the land-granting department of the district in which he proposes to settle, he will obtain a ticket of location for a certain quantity of land furnished; with this, his first care ought to be to select a proper situation for his house. This should be placed, as near as may be, to the public road on which his lot abuts, and contiguous, if possible, to a spring or run of water. Having chosen his spot, he then sets about clearing a sufficient space to erect his house on, taking care to cut down all the large trees within the distance of at least one hundred feet; the dimensions of the house are generally twenty feet by eighteen; and the timber used in constructing the walls, consisting of the rough stems of trees cut into those lengths, is not to exceed two feet in diameter; the height of the roof is commonly about thirteen feet, which affords a ground-room, and one over head; the house is roofed in with shingles (a sort of wooden tiles) split out of the oak, chesnut, or pine timber; a door, windows, and an aperture for the chimney at one end, are next cut out of the walls; the spaces between the logs being filled up with split wood, and afterwards plastered both inside and out with clay or mortar, which renders it perfectly warm: when once the necessary space for the house is cleared, and the logs for the walls collected on the spot, the expense and labour of the settler in erecting his habitation is a mere trifle; it being an established custom among the neighbouring settlers to give their assistance in the raising of it; and the whole is performed in a few hours. The settler having now a house over his head, commences the clearing a sufficient quantity of land to raise the annual supply of provisions required for his family.

The following is the method in which land is cleared. The brushwood is first cut down close to the ground, and piled in heaps as it is cut; next come the saplings, or young trees, to the size of six inches in diameter, these are cut into short lengths and laid on the brushwood. Such timber as may have fallen by age or accident on the space to be cleared, is then sought out, the stems of which are chopped into lengths of eleven feet, and the lops and tops piled with the brushwood, &c.; these operations performed, he may set about cutting down the large trees; they are chopped at about two feet and a half from the root, and the stem of each tree is cut up into lengths of eleven feet. The limbs and tops are cut into short lengths and packed on the brushwood heaps. When the whole of the large trees on the ground to be cleared, are disposed of in the manner just described, the brushwood heaps, as soon as sufficiently dry for the purpose of burning, (which in the summer months is the case in a fortnight) are set fire to. During the process of burning the heaps must be attended to, and the ends occasionally pushed in, in order that the whole may be consumed; after this has taken place, the ground is ready for what is called logging; this is performed by a yoke of oxen, with chains to fasten round the ends of the stems, (reserving such as will split into rails,) which are drawn together and piled up in different heaps. Three or four men are generally required to attend this work; these last heaps may be immediately set fire to, if the weather be dry, and likewise require to be watched by a man, who is to push in the logs as the centre becomes hollow. After all is consumed, excepting the lengths intended for rails, the ashes are either spread out on the land, or collected for the makers of potash, who give about 4*d.* per bushel for them. If the cleared ground is sufficiently near to a potash work for transport, the price given for them there nearly covers the expense of clearing. The land is now prepared for fencing and sowing; for the latter object, the ground is merely gone over in cross directions with a triangular harrow. This form is adopted that it may pass through the stumps, which still remain in the ground. Potatoes and Indian corn are put in with a hand-hoe; amongst the latter pumpkin seed may be sown without injury to the corn. The properest season of sowing wheat is generally from the end of August to the middle of September; but on these newly cleared lands, that do not require ploughing, it can be sown at any time before the frost sets in, although it cannot reasonably be expected that late sown wheat should produce so abundant a crop as that which is put into the ground early. The quantity of seed used is one bushel only per acre, and the usual return is from twenty-five to forty bushels; whereas in England, the farmer sows three bushels to the acre, and the yield does not exceed thirty bushels. The other grains are sown in the following proportions: a peck of Indian corn will plant one acre, yielding from forty to one hundred bushels; pease require two bushels and a half to the acre; oats two bushels; barley three; rye one; and buck wheat half a bushel. A settler arriving in June, if industrious, can with ease prepare five acres for wheat, to be sown the same autumn; after which he may employ himself in clearing

R. J. W. Horton,
Esq.

(2 July.)

clearing fresh ground for his spring crops, and at the end of the first fourteen months he will find himself amply supplied with bread and vegetables; these, with the addition of a cow and a pig or two, will be all that is necessary for his sustenance. His cow and hogs will find their living in woods during the greatest part of the year, and only need a trifling support in winter. There are distilleries generally established throughout the country, where the settler can obtain spirits in exchange for his grain on very moderate terms. Brewing also might be carried on at little or no expense, as the soil and climate produce hops of the best quality; grist and saw-mills are also sufficiently numerous in all parts of the provinces. Whenever the settler can afford to lay down in grass a sufficient quantity of land for the keep of a few sheep, he can from the wool, with the aid of a small patch of flax, manufacture whatever clothing his family may want. It may be as well to remark in this place, that the use of the axe generally appears at first somewhat awkward to the emigrant from Europe, but practice will soon reconcile him to it; such persons, however, as prefer hiring American choppers, and possess the means of so doing, can easily find contractors for the work. The usual charge for chopping, burning, fencing, and bringing the land into a proper state to receive the seed, is at the rate of about 4*l.* 10*s.* per acre, the workmen finding their own provisions; an expert chopper will clear, ready for burning, an acre of heavy timbered land in eight or ten days.

"From the foregoing observations a tolerable idea may be formed of the advantages to be derived by a poor family emigrating to Upper Canada, the very first year assuring its members abundant means of living well, and each succeeding one enlarging its scale of comforts. The settler in the first place obtains from the Crown a grant in perpetuity of from fifty to acres, according to the size of his family, and his means of improvement; his labour therefore is wholly expended upon his own property.

"A large family of children, instead of proving a burthen upon him, contribute greatly to his assistance; as useful employment is constantly to be found even for small children in a new settlement. Public schools are universally established throughout the province, upon a liberal foundation.

"To afford some idea of the rapidity with which a new settlement will advance under proper management, it is only necessary to state, that the writer of this tract having been entrusted by His Majesty's government with the location and general superintendence of those extensive districts on the shores of Lake Erie, which at present bear the name of the Talbot Settlement, has, by his exertions in opening roads at convenient distances, aided by the peculiar advantages to the soil and climate, collected around him a population of twelve thousand souls at the least, in the short space of ten years. The generality of these settlers, on their arrival in the province, were persons of the very poorest description; whereas they may be now said to form as independent, as contented, and as happy a body of yeomanry as any in the world.

"This, too, has been accomplished in a situation which, little more than ten years ago, appeared an impenetrable wilderness, and was above one hundred miles removed from all human intercourse."

Anticipating the success of the measure which is now in progress, is that founded upon the resolution of the House, or upon any experiment which has already been successfully tried?—It is founded upon an experiment that has been most successfully tried. In the course of last year, Colonel Talbot, brother to the member for Dublin, was in this country, and I had an opportunity of frequently conversing with him upon the subject of the settlement established by him in Upper Canada; and he drew up remarks upon the province of Upper Canada, which are printed in the Appendix to the tract that I have given in. With reference to these successful experiments the plan has been drawn up which is now submitted to the Committee; I have also given in the calculation upon which that experiment has been founded.

Were the settlers in Colonel Talbot's establishment Englishmen?—Englishmen, Irishmen, and Scotchmen.

He actually took them from this country?—As they poured into the Canadas he took them.

What communications have you received from Ireland since the experiment has been in progress, which leads you to imagine that it is a plan likely to be embraced with avidity by the peasantry of Munster?—I will read some letters which I have received: the first is dated

"Dear Sir,

"Fermoy, 9th June 1823.

"SINCE the receipt of your note of the 29th of May, authorizing me to carry into effect the plan of emigration to Canada, I have used every exertion to give it publicity, and to insure its success. Lord Ennismore and Mr. Becher advised me to take as many persons as possible from the barony of Fermoy and its immediate neighbourhood, as being in the most disturbed state; and I have acted accordingly, circulating some hundreds of the memorial in the towns of Fermoy, Ballyhooly, Mallow, Kanturk, Newmarket, Ballnarilly, Charleville, Killdorrery, Domeraile, Killworth, and all the other towns and villages within that circle; and my whole time has been spent in visiting those different places. In each town I have named a person to whom those wishing to emigrate are to give in their names and

R. J. W. Horton,
Esq.

(2 July.)

and number of family; and from that list, with the advice of the magistrates, I shall select such as they are most desirous to get rid of; but I find that they are rather backward in going to the magistrates to give in their names, when at the same time I am applied to in every direction I move. In the villages I have made a point of calling on the catholic priest, as well as others, to give them an opportunity of asking me any questions they might choose. At Newmarket I met with a very respectable priest, who seemed heartily to second me: he promised to read the memorandum from the pulpit, and to explain to his parishioners the great benefit that was offered to them. Nothing could be better received than the proposals are by all the gentlemen of the country, who universally think it will do great good."

The next is dated

" Dear Sir,

" Fermoy, 12th June 1823.

" I RETURNED to-day from Charleville, and can now positively state, that the proposals for emigration are very well received by the Irish people wherever they have been made public, and that they are most anxious to avail themselves of the liberal offer of the government. For the last three days I have been going around to the smaller villages, that I might be able to judge for myself of the temper and disposition of the lower order of people; for it is not an easy matter to form any opinion from what you hear. When I first came I was frequently told that great opposition to the measure would be made by the priests, as it would lessen their congregation, and consequently their income and influence: now, in justice to the catholic priests, I must say, that I have seen nothing like it, but quite the contrary; in most of the towns they are to all appearances upon very good terms with the resident protestant clergymen, and so far from thwarting or raising any objections to the plan, they have universally supported me."

In carrying this scheme of emigration into effect, has it been the object of government to induce the emigration of persons possessing capital, or of persons in the lower condition of life?—It has strictly been confined to persons in a lower description of life, who are not possessed of any capital whatever.

In districts in Ireland in which the evil of an over-population has been very strongly felt, supposing security given to government for the payment of an annual sum, sufficient to secure them from the advance that has been made, do you conceive that there would be any difficulty in carrying the scheme of emigration, of which you have now spoken, into effect?—I conceive that there would be no objection in principle to advancing money for the purpose of carrying the system of emigration into effect, provided that adequate funds were pledged for the repayment of such money at a future period.

By whom are those funds to be pledged?—By parties who are enabled to give adequate security for the repayment.

Are the emigrants themselves to make this pledge, or persons interested in sending them out in Ireland?—I mean distinctly persons in Ireland, who are interested in sending them out; but by way of example, I would suppose, that a committee should be formed in Ireland for the purpose of facilitating emigration, if that committee could furnish adequate security for the repayment of money advanced by government, with interest, I cannot conceive in principle that there would be any objection to such an advance upon the part of government; it would at the same time be in the power of that committee to make any terms with the individuals who are to take advantage of the emigration, for the purpose of repaying to the committee the sums for which they might make themselves answerable to the government.

Do you conceive that the emigration from Ireland could be carried on with the assistance of government upon better terms than it could be carried on by private individuals?—From every opportunity of information that I have received, I should answer most unquestionably "with the assistance of government."

From the information which you have received of the state of Upper Canada, do you consider that emigration from Ireland might be carried on to a very considerable extent, and to the profit of that colony?—I consider that the emigration from Ireland might be carried to an indefinite extent; but with respect to the benefit of the colony, that must necessarily depend upon the conduct of the emigrants who might be progressively settled there.

Has there been any communication made to the Colonial Office, which leads them to anticipate the good conduct of the emigrants who are likely to go out from Ireland?—I am not aware that any direct information has been received to that effect; but most undoubtedly the impression has been produced in my mind, from various conversations I have had with persons long resident in Upper Canada, that the bad character of parties previous to emigration is no indication whatever of their subsequent conduct.

R. J. W. Horton,
Esq.

(2 July.)

Will you have the kindness to inform the Committee whether there is any expression of opinion contained in the Report to the King's government, from the commissioners lately sent out to New South Wales, upon this subject?—In the First Report of the Commissioners of Inquiry there is the following passage; "The convicts embarked in Ireland generally arrive in New South Wales in a very healthy state, and are found to be more obedient and more sensible of kind treatment during the passage than any other class. Their separation from their native country is observed to make a stronger impression upon their minds, both on their departure and during their voyage, and the ignorance in which most of them are respecting their future fate, tends to preserve those salutary impressions until its termination."

Has there been any experiment tried with reference to emigration from Ireland to the colony of the Cape of Good Hope?—There is an experiment at this moment in operation; three hundred and fifty persons are to be sent out, who are to be articulated to Mr. Ingram, who has for some time been a resident settler at the Cape.

Have you received any report of the success of Mr. Ingram in any former experiment which he has tried?—Mr. Ingram went out to settle at the Cape in the year 1819: he took out with him a capital of about the value of 1,800*l.*: he also took out twenty-seven men, twelve women, and twenty-nine children, all articulated to him for the space of three years. The terms of his agreement with those parties were, that mechanics were to receive 1*s.* per diem wages in money; labourers 6*d.* per diem, and food for themselves and families; the time of those persons so articulated has expired, and they are all in full employment, in different services, and receiving an infinitely higher payment of wages than what Mr. Ingram gave. Mr. Ingram has a grant of seven thousand five hundred acres at Clanwilliam, which is situated about one hundred and forty miles north of Cape Town. He has wheat and rice upon one thousand acres, which are open to irrigation; the remainder feeding ground, and cattle of the European breed, and Merino sheep. His manager receives one half of the produce. The present value of his stock he estimates at 1,800*l.* or 2,000*l.* at the lowest. The estimated profits of the whole year, divided with his manager, about 400*l.* This is the value of the corn alone. The manager is allowed the butter and milk of the cattle for taking care of them. Mr. Ingram has the advantage of the increase of the stock, which is all that he requires. Mr. Ingram left the colony, and returned to Great Britain with the intention of taking out with him to the Cape his family, who had not accompanied him in the first instance, and fifty labouring men agriculturists. His motive in returning home was to secure European labourers, as he perceived that a pledge had been given that slave labour was not to be employed on new grants. He proposed to make similar terms with those fifty men that he had done with the former settlers. He then came to the colonial department to ascertain whether he could receive any facilities; for if the expenses of transport and food could be defrayed for him during the passage, he should be very glad to take out five hundred individuals upon the same terms. The government gave Mr. Ingram no assistance with respect to the fifty that he intended to take out for himself; but with a view of encouraging a partial emigration from the south of Ireland, in combination with the other emigration which it was intended to encourage to the province of Upper Canada, they consented to allow 14*l.* per head for the transport and food of the three hundred and fifty individuals, who were to be subject to the same treatment which Mr. Ingram had engaged to apply to the fifty individuals who accompanied him on his own account; all those individuals are under articles of indenture to Mr. Ingram, and those articles fully explain the nature of the terms entered into. This emigration evidently has not the least of the character of the emigration to Canada, being founded merely on the demand for labourers at the Cape; and there is no doubt, after the experiment has been made, that individuals, finding the terms upon which they can obtain labourers, will be induced on their own account to advance the money necessary for effecting any second emigration of the same character.

Are the same observations you made with regard to the saving to individuals in emigration to Canada, by the assistance of government in the expense of emigration, also applicable to emigration, to the Cape?—I do not think that the same advantages would exist with respect to emigration to the Cape, as that would entirely depend upon the expenses of passage; it would require no arrangement but their reception in the families of those settlers who were willing to take them as articulated servants.

*The Right hon.
The Countess of
Glengall.*

(2 July.)

The Right honourable the Countess of Glengall, called in; and Examined.
IS your ladyship acquainted with the state of any part of the south of Ireland?—
I am, with the county Tipperary.

How long has your ladyship been acquainted with the county Tipperary?—
About thirty years.

Have you resided for any considerable portion of time in that county?—I resided there for twelve years, without quitting it, and was very much engaged there.

During the course of that residence, has your ladyship had much communication with the lower and middling classes of peasantry and farmers?—I made it my business to communicate as much as possible with all classes, and particularly with the lower and middle classes.

Were there any charitable establishments in that neighbourhood for the relief and employment of the poor?—There are county establishments; there is the county infirmary, which is in the city of Cashel, in the county of Tipperary. At Clonmel there is a house of industry, and I think they all require very great examination and reform.

Do you think that the house of industry to which your ladyship has alluded, is useful in promoting the occupation and employment of the people?—As far as I can judge, having visited it, the expense that it costs the county is much greater than the advantage derived from it; that is to say, that if it were better managed, much more good would be done at much less expense.

Has your ladyship endeavoured to establish any system of employment and relief for the poor in your own immediate neighbourhood?—I have first established, in our neighbourhood, a fever hospital by private subscription, which has been of the greatest possible advantage; and since that, a factory for the employment of the females of the country.

What induced your ladyship to establish that factory?—From their being totally unprovided with any means of employing themselves; they have no possible means of procuring employment.

In the present state of that part of the country with which your ladyship is acquainted, is there any considerable proportion of the population which is without means of employment?—Almost the whole, both male and female; for the landed proprietors, and the middling classes of the farmers, can no longer afford to employ the labourers, in consequence of which they are all idle, walking about the country; which is one reason why they are always up at night, and doing mischief.

From your ladyship's experience, do you think the lower classes of Ireland are anxious for employment?—Indeed I have always found them so, both male and female.

Is that anxiously manifested by a disposition to work even at very reduced wages?—I do not think that the females like to work when their remuneration is not considered by them sufficient; but the labourers will work for almost any thing. In the time of scarcity (when they were employed on public works), when the work was coming to a close, we were afraid of their making a riot in the very heart of the town, in consequence of the work being at an end, they were so anxious for it.

Are there any and what difficulties existing in those parts of Ireland with which your ladyship is acquainted, which impede the industry of the female peasantry; any deficiency of implements?—They are very greatly deficient; they have nothing. They are perfectly naked as to clothing, and perfectly helpless, without any comfort or convenience, or any possible way of gaining their livelihood; and unfortunately the gentry are so used to see that kind of distress that that does not shock them: they see people naked, and with nothing in the world but a blanket to sleep on, without a bed to lie on; and they are not aware that that is not the usual and proper way for them to exist, they are so used to see it.

Do you conceive that there exists very great deficiency of implements for spinning amongst the peasantry?—Very great.

Is there an anxiety on the part of the female peasantry to become possessed of spinning-wheels?—Yes; and hackles and looms, and every thing of that kind. In the south, if you wish to establish the linen manufacture, you must send for weavers from places where it is already established; they cannot go on without them.

Is your ladyship acquainted with the mode in which flax is prepared for the market; is it by scutching-mills, or by hand labour?—We have had some scutching-mills, but we found it very difficult to induce the people to make use of them, they

*The Right hon.
The Countess of
Glengall.*

(2 July.

have been so entirely mismanaged. The people who had the care of them had cheated and robbed, and done every thing they could to impede it, and the consequence is, that the prejudices of the people have not been done away; but the great difficulty that is felt is, their not knowing how to cultivate the flax before it comes to the scutch-mill.

Are you acquainted with any establishment of education in the south, which connects the education of industry with the ordinary course of school instruction?—No; there is nothing of that sort in our part of the world.

Do you conceive that such establishments would be useful?—Of the greatest possible use. The mechanics in our part of the country are very deficient; we are obliged to send over to England for all our carpenters' work; the slaters are also very bad. Nothing could assist us more than establishing something where you could teach the people those common handicrafts.

Are you aware whether the price of labour in those parts of Ireland with which your ladyship is acquainted is, generally speaking, a money payment, or a system of account?—Almost always of account, and they are obliged to work it out at reduced prices.

Do you conceive that that system is one which is satisfactory to the tenant?—It is one of the greatest misfortunes we have, for it is a regular system of oppression. The people under the better sort of farmers are worse off, I am convinced, than any of the slaves in the West Indies: they cannot be worse off than they are.

Do you conceive a system of payment for labour in account is applicable to the execution of public works under the authority of grand juries, as well as to the ordinary occupation of the peasantry?—With respect to the mode of paying persons who undertake presentments, they cannot get it for a considerable time after they have laid out the money; the consequence of which is, that not having any capital they are obliged to pay their labourers in account, which is a great source of misfortune, particularly with respect to the supervisor's account. In some cases the supervisor cannot receive the money he lays out on the road for a year and a half, then the peasant is obliged to wait, or to get it in account; and very often, if there be any informality in the presentment passing, then the peasant is in a very bad way indeed.

Have any means occurred to your ladyship, by which extensive employment and relief might be given to the peasantry of the south of Ireland?—There has been a project for sometime in agitation, of cutting a canal from Waterford to Limerick; cutting the south of Ireland across like the Caledonian canal in Scotland; and certainly if that could be accomplished, it would be of the greatest use to the whole of the south of Ireland, and it would diffuse employment very greatly indeed in the south of Ireland.

Do you conceive that it would give any additional permanent employment, or that the additional employment would be merely confined to the execution of that particular work?—I conceive that it would stimulate industry and commerce exceedingly; it would bring fuel to a part of the country where there is hardly any, and the people are very much distressed for it; it would promote every sort of commerce, inasmuch as having nothing but land-carriage, it impedes buildings; one is obliged to bring coals and timber and slates, and every thing by land-carriage, which is a very great disadvantage, and which certainly prevents the improvement of the country very much indeed.

In the efforts which your ladyship has made to produce an improvement of the people in your neighbourhood, have you found the catholic clergy anxious to co-operate in the efforts you have made?—I have always found the catholic clergy perfectly willing and ready to give every assistance, provided you do not run counter to their prejudices; but if they think you want to convert the people, they will oppose you; but I have always found the Catholic priests and the bishops anxious and ready to assist, and promote every kind of object that was of use, provided you did not run counter to their prejudices.

Has not your ladyship an establishment at Cahir, at the present moment, for the employment of the female peasantry in spinning?—Yes; I have.

Do you conceive that to have been productive of benefit in the part of the country to which you allude?—The very greatest benefit; I found them ill-clothed, and totally destitute of habits of industry, and in the course of six months they were all better off in their families and cleaner, and their habits improved, and anxious to be assisted and promoted in every way.

What

447

*The Right hon.
The Countess of
Glengall.*

(2 July.)

What was the course your ladyship took for the establishment of that factory?—Instead of giving out the wheels, which had been my usual habit, and letting them become their own property, I only lent them to them; and if they did not use them I made them return them; whereas before they used to take the wheel, carry it home, and very often keep it in their house useless, or else sell it; but, by keeping an account of their names and residences, and if they do not bring in their work within the specific time, sending back for the wheel, I found that I could make them keep to work, and to earn money; now, if at any time there is want of flax, or no work given out, they are all very unhappy about it.

Do you conceive a moral improvement to have been derived from that establishment amongst the female peasantry at Cahir?—I conceive, that not only employing their time usefully, but bringing them into contact with the ladies of the county; seeing them at all hours of the day, and seeing their habits, I find that that has the greatest influence upon them: the great thing is the contact between the higher classes and the lower.

Have you found the peasantry grateful for the efforts which you have mentioned?—Beyond any thing.

Have you found any difficulty in procuring a sale for the articles of manufactures which you have produced?—All fine articles are very difficult of sale; but in the county of Cork, they have a coarse manufacture which, if it were promoted, they could get a sale for any quantity that was made.

In the factory which you have established at Cahir, have you tried the experiment of manufacturing that coarser article?—I have never yet been able to manufacture it as cheap as they can in the county of Cork; for our weavers are accustomed only to weave for private families, in consequence of which they charge more than they would if they wove on their own account, and sold at the public market; and at constant employment, they impose on a private dealer, whereas, if you can induce them to bring their goods to market on their own account, by encouraging public markets, that is the way of bringing down the markets. Now, at Clonakilty and Dingle they do that, and at Westport; if you can establish public markets, that is the great thing, not only in the article of the linen manufacture, but as to corn and every thing of that kind. One of the great mischiefs of our country is, that the farmer does not take his corn to public market, he takes it to the miller and jobber; in consequence of which, the millers combine together to settle what price they shall have, and they engage the corn beforehand at their own prices, and then the farmer is obliged to turn his corn at that mill, and at their price; whereas if you could encourage competition it would be of the greatest possible advantage to the peasantry: in England they sell by sample, and have regular clerks of the market, but in Ireland that is not done.

That extortion would be prevented by more extended general employment?—Certainly.

Does your ladyship conceive there are any deficiencies which at present exist, and prevent the establishment of well regulated yarn markets in the south?—I am quite convinced that our part of the country is better adapted to growing of flax than any country in the world, our soil is excellent for it; and as it is, though they cultivate it infamously, they certainly produce a good article; but if the cultivation of flax was attended to, we should have just as good flax as they have in Flanders.

Is the process of steeping and preparing flax for the market defective in those parts of Ireland?—They are totally ignorant of it; they injure the flax most materially; nothing requires so much cultivation as flax.

Under the existing laws, it being necessary to have certain officers for the care of the linen market, are you aware how those officers are appointed?—Yes; there are, first, provincial inspectors; four of them; our inspector is a very clever and very industrious and intelligent man, Mr. Besnard; then there are under him again county inspectors, who are appointed by the trustees of the Linen Board, but it has been always jobbed, and their qualifications never have been attended to; the consequence is, that in our county it is exceedingly ill done.

Do you not conceive that the appointment of proper persons as inspectors in those counties, is essentially necessary for an extended sale of linen?—You must first establish the markets, and then the inspector will be of use; but at present we have scarcely any public markets for the sale of yarn or for flax, it is all private traffic.

What course do you think could be taken for the encouragement and establish-

ment

*The Right hon.
The Countess of
Glengall.*

(2 July.)

ment of regular markets?—Premiums for the growing of flax, and premiums for the sale and purchase of flax in open markets.

Do you think that the present prices are not in themselves sufficient to encourage the growth of flax and the produce of yarn, without such artificial encouragement?—I think nothing can be more profitable to the farmer than the growing of flax, provided he knew how to get a good crop; but their habits have been so inveterate of growing wheat, oats, and barley, that they do not like to attempt flax; they are afraid of it; and they have failed considerably in the growth of it for want of knowledge how to cultivate it, therefore they are unwilling to undertake it at present, from having often failed through ignorance.

Then do you not conceive that taking means to instruct them in the best means of preparing flax for sale, would be more likely to be a successful mode of improving the cultivation of flax, than offering premiums?—I conceive premiums would stimulate them very much, and they need only be continued for a year or two; but they would stimulate them very much indeed.

Would not the effect of such premiums be, rather to extend the present cultivation of flax than to improve the manner in which it is carried on?—I would premise that you must teach them how to manage it; there was an idea in the Irish committee of bringing over some families from Flanders. I conceive that you may talk for ever, you may write books for ever, and the common Irish will not attend to it, but that if they saw the thing done before their eyes, they would then immediately take the example; and I conceive that the funds that were in this committee, which they had for the purpose of ameliorating the condition of the poor, could not be better employed than by bringing over a few families from Flanders.

Are you aware whether the condition of the poor in the south of Ireland, and the state of the linen manufacture there, has been brought specifically under the notice of the trustees of the Linen Board?—The attention of the trustees of the Linen Board has been chiefly heretofore turned to the north; for the trustees in the south, there being very little or no manufacture in the south, the southern trustees very seldom attend; they are very few in number, and those do not attend, for the affairs of the north being so much more attended to by the trustees, it would be very useless for them to interfere, and the trustees appointed for the south have generally merely received their wheels which they are entitled to. Indeed when I talked of establishing the linen manufacture, I was laughed at, as being a sort of thing which was quite ridiculous, and which was considered impossible.

Your ladyship having stated that the gratuitous distribution of wheels and reels has not been found effective, do you conceive that any system of gratuitous relief to the people of Ireland would have a beneficial effect?—I never would give them any thing without working for it; they do not value it when they get it gratuitously, and it would be expected again the next year; but if you make them work for it they set a double value upon any thing they receive.

Are there any difficulties in the part of Ireland with which you are acquainted, in procuring flax-seed by the peasantry?—If they procure it from the common dealer they have to pay a very high price, much more than they ought, and very often the seed is bad, and the time they are about to sow it is the time when they have not any money in their pockets; and they very often are prevented from sowing flax-seed from not having a few shillings to buy seed; but if the system was improved, they would save their own seed as they do in Flanders, at an immense profit, to the amount of ten guineas an acre.

In the part of the country with which you are acquainted they do not save their seed?—No.

They consider it would be injurious to the flax?—Yes, but it is proved by experiments that it is not.

Are there any local causes with which your ladyship is acquainted, which operate as a discouragement to the growth of flax?—Their not being in the habit of it, and their having very often failed.

Is there not an opinion that the seed saved on the ground will not produce so good a crop as foreign seed?—There is that prejudice.

Is not it the fact?—I do not believe it is; at least Mr. Besnard, who went to Flanders, found they uniformly used the seed; they may occasionally change the seed, as you do the seed of potatoes, but then you can always use the seed; but when you are talking of the cultivation of flax, you ought always to remember, that the cultivation of the land in the south of Ireland is altogether so very bad, that it requires

249

requires great improvement. There was a farming society in Dublin, that has gone to ruin; they offered premiums for ploughing matches, and when the premiums were gained, they never were paid, of course the farmers did not choose to undertake it again, and there are no farming societies that are of the slightest consequence; there are none at all in our county, but we are behind hand, in a way that you have no idea of; I conceive that it is the ill treatment, and the total want of faith, that pervades the whole system of our interior management, that occasions the great discouragement that the farmers labour under.

The Right hon.
The Countess of
Glengall.

(2 July.)

Jovis, 3^o die Julii, 1823.

THOMAS SPRING RICE, ESQ. IN THE CHAIR.

Gerrard Callaghan, Esq. called in; and further Examined.

HAVING stated in your former evidence that you would advise one expedient, which you think would be found of great utility, by enabling persons obtaining presentments at the assizes to raise money on the faith of those presentments, will you have the kindness to explain what your meaning was in that answer?—I will hand in to the Committee a formula of the warrant, as answering the purpose I intended.

Gerrard Callaghan,
Esq.

(3 July.)

“ WE certify, That *A. B.* and *A. C.* will be entitled to receive, in _____ days after the ending of Autumn [*or Spring*] Assizes [*as the case may be*] 182 _____ the sum of £. _____ if the presentment, N^o _____ of which above is a copy, shall be duly accounted for without traverse.

Secretary.
Treasurer.”

“ Mr. Treasurer of the County of _____

“ WE pray you to pay Mr. *D. E.* or his order, the above stated sum [*or sums*] of £. _____ when the same shall become payable; and this order shall be to you a good acquittance from us.

A. B. } Overseers to Presentment, N^o _____
A. C. }

The first part of it contains a copy of the presentment. The second part contains a certificate from the grand jury, secretary and treasurer, that the overseers therein named will be entitled to receive, in so many days after the ending of the autumn or spring assizes, as the cases may be, if the presentment N^o _____ should be duly accounted for without traverse. The third part of the warrant is an order from the overseers, or the treasurer of the county, to pay the person holding it the stated amount of the presentment, when the same shall become payable; and that that order should be to him a good acquittance from the overseer. I conceive that a person of character would have no difficulty whatever in raising money upon his or their individual promissory note for the execution of presentments from any banker, giving this presentment warrant as a collateral security. The banker would discount the notes upon the faith of the work being executed, that being the only contingency that he would run the risk of, if the law were made to give him a valid lien upon the amount of the presentment, in the event of the death, insolvency, or bankruptcy of the overseers.

The right of the overseer to the presentment is contingent upon his due account; is subject, therefore, to the discretion of the grand jury, and is liable to the incident of a traverse?—It is; and it is subject of course to the execution of the work; and the presentment being duly accounted for, and its not being traversed; that the banker or person advancing the money on it would have a lien upon the amount.

It is also subject to the contingency of the individual receiving the presentment choosing to execute the work or no?—Certainly I stated that.

Gerrard Callaghan,
Esq.

(3 July.)

Then in the event of the overseer, who has obtained an advance upon the credit of presentments in the way you have suggested, either not executing the work or not accounting duly for it, or upon the determination of a traverse adverse to the account, what would be the security of the person making the advance?—The note of hand; which is the instrument that I assume to be discounted, guaranteed collaterally by the presentment warrant.

Do you not conceive, that if that note of hand were a sufficient security, that is, if it were the note of hand of a solvent, and respectable person, that the advance could, under the present state of things, be equally well obtained?—I think not; because, generally speaking, bankers do not like discounting the notes of country gentlemen, nor the notes of work contractors of credit at so long a date as from one assizes to another.

The time of credit would not be altered by the plan that you have suggested, and the ultimate security would be still the note of hand of the party to which the transfer of the presentment would only be collateral; what additional benefit do you then conceive would follow from the plan that you propose?—The foundation of the transaction is, the character of the overseer; if the banker has a moral assurance that he, the overseer or contractor, would execute the work, he knows that the money will be paid without default by the treasurer; and having the presentment warrant, which is irrevocable, he is assured that the money will be paid to him if the work be executed and duly accounted for; and if the work be executed and duly accounted for, the presumption is, that no traverse against it could be sustained.

Have you any other suggestions to offer to the Committee which can point out any mode of affording more extended employment to the people?—I do not think that agriculture alone can occupy the population of Ireland to the extent that it now exists, or is likely to exist, even though the present excess should be removed by emigration or other such expedient. I think that we should have a commixture of manufactures, with agriculture; and I should especially advise, that we should imitate the ancient policy of the Irish parliament in that respect.

To what do you allude?—In giving premiums as encouragement for the establishment and promotion of various manufactures in Ireland. Between fifty and sixty years ago the journals of the Irish parliament will show grants of large sums of money to various establishments of individuals, for erecting and carrying on various manufacturing establishments.

Were those resolutions of the Irish parliament acted on?—They were grants of money to various individuals.

Do you conceive them to have been effectual for the objects for which they were intended?—I think they were effectual.

Can you state any one instance in which such artificial encouragement has been productive of permanent advantage in Ireland?—I think Ireland was growing an improving country; its employment keeping pace with its population, and its population producing increased occupation, up to the period of the rebellion of 1798. Since, their manufactures have declined, and general employment, in the ratio of the population, has diminished; it required the fostering hand of parliament to establish the linen manufacture of Ireland; to establish the linen manufacture and fisheries of Scotland; and centuries ago the true principles of political economy were departed from in this country to promote its grand staple, the woollen trade. In order to establish manufactures in Ireland, I am quite sure that something must be done on a large and liberal scale, by the state, to promote them. I should respectfully advise the formation of one general Board of Commissioners in Dublin, to be paid as well as the Revenue Boards; composed partly of Scotch, English, and Irishmen, distinguished for their general intelligence and practical knowledge of manufactures, subject always to the sanction of the Treasury; and place at their disposal a certain annual sum, suppose 200,000*l.* a year, for the encouragement of, and advancing by every means they can devise, such manufacturing establishments and internal traffic of every kind, as would be most likely to be carried on afterwards with permanent profit. I think the superintendence of the linen trade, which is at present vested in a board composed of seventy gentlemen, might now with perfect safety and advantage merge in them; and also that the fisheries might be transferred to them.

Do you consider the establishment of the Linen Board to have been productive of good effect in the promotion of the linen manufacture in Ireland?—No doubt it has;

has; and it is from having such an example before us, that I should recommend, on the same principle, a board for more general and enlarged purposes.

Gerrard Callaghan.
Esq.

(3 July.)

What are the purposes to which you would direct the attention of such a board, if constituted?—I have no doubt that Ireland might be made to participate in the cotton trade, and in the coarse woollen and stuff trade; those two occur to me at the moment, but I dare say the resources of Ireland would furnish other objects.

Do you mean to say, that at the present moment capital could be advantageously employed in Ireland in the cotton and woollen trades?—I know of one establishment in Bandon, twelve miles west of Cork, that imports its cotton from Liverpool, and is carried on profitably.

Where are the cottons, which are manufactured at Bandon, sent?—Manufactured into corderoys, and sent to Cork and Dublin for sale. Belfast also enjoys a portion of the cotton trade, and that branch of business is increasing very much.

If you then consider that capital could be advantageously invested in those lines of business, how do you account for extensive investments not taking place?—I think the lately existing mis-called protecting duties have operated greatly to obstruct the developement of the natural resources of the country; when those shall be entirely removed, I do not see why Ireland should not manufacture certain articles in a coarse state, to be completed in Yorkshire or Lancashire, just as is the custom now to send the raw material or half finished goods from one county of England to another, and brought back to be put into a finished state.

Do you not conceive that the trade can trust to the effect of those natural causes without the establishment of such a board of trustees as you have suggested?—If tranquillity should be completely established in Ireland, not any temporary suppression of bad feeling, but such a settled state of repose, the result of a general contentment of the people, as shall give security to the English settlers and English capitalists, such may be the effect ultimately, no doubt; but slowly. Tranquillity is the basis of every improvement to be looked to, and that effected, the expedient that I propose, is with the view of hastening on the natural consequences of that state of things.

Do you conceive that the establishment of such a board of trustees in Dublin, would have any effect in promoting the tranquillity of Ireland generally?—I conceive that the establishment of a board, for such general purposes as I state, would of course produce a mixture of manufactures in the country; thereby giving occupation to a great portion of the people, and by making them contented and easy, and improving their means of general consumption, diffuse general benefit throughout the community; because one class of the people cannot receive benefit without communicating it to all the rest, nor can any one class be depressed without sharing that depression ultimately with all the rest also. The country cannot work through her present difficulties without such expedients as I humbly propose.

By what means do you suggest that this board should produce the effect to which you have alluded?—I will suppose a premium held out to any man who should establish himself in any part of Munster with a certain quantum of machinery, which the board would practically know, must employ a certain quantum of people; that that premium, which we will suppose to be 1,000*l.* a year, for five or seven years, if they should work it, I conceive such a temptation as that may attract many skilful and adventurous manufacturers from Scotland and from England, and I should conceive that the effect of establishing those manufacturers would not at all interfere with the prosperity of the same trades in Great Britain; because, as I would look from the employment of the people to their increased means of consumption, it would only be enabling the population of Ireland, which are not now in a state to consume the manufactures of England, to consume those of which ever country could be afforded to them cheapest. I would also take the liberty of suggesting to the Committee, that an alteration of the present banking laws of Ireland is quite indispensable.

What would be the effect of the alteration which you would propose to make?—To make the trade as unrestricted and free, and as open to all parties as it is in Scotland or in England.

Will you then state the distinction which exists between the banking laws of Ireland and the banking laws of England and Scotland?—In the first place, a person who, in my mind, is best qualified to be a banker, namely, a person of general intel-

Gerrard Callaghan,
Esq.

(3 July.)

ligence and knowledge of business ; a person in trade, in short, though master of ever so much capital, is disqualified from being a banker ; and a banker is disabled from doing that which is, in my mind, the essence of his trade, namely, to buy the use of money as cheap as he can, and sell it as dearly as he can ; for the law prevents him from receiving money at any rate of interest ; that is to say, it enacts that any obligation of his professing to pay interest on money, is null and void. I should not aspire for the province of Munster, Connaught or Leinster, to making it more than what Ulster now is, where they have disregarded the law of banking in Ireland, and introduced the Scotch system of banking ; in fine, Ulster enjoys a mixture of manufacture and agriculture, and a full circulation of money founded upon a secured basis.

Do you conceive that the establishment of chartered banks, on the system which is pursued in Scotland, would have a beneficial effect with regard to the money transactions of the south of Ireland ?—I have heard it proposed to have a branch of the Bank of Ireland : I should myself not approve of that. In the first place, I do not think the bank would commit their credit and property to any provincial agent ; and in the next place, if they did, I should protest against their having a monopoly of the benefits of the banking trade of the kingdom.

The question does not allude to the establishment of branch banks of the Bank of Ireland, but to the establishment of chartered banks on the principle of the joint-stock banks of Scotland ?—I would by all means imitate the principle of the Scotch banks ; but which principle, I believe, is yet susceptible of great improvement.

In what respect ?—I will refer to the publication of Mr. Joplin on that subject, as giving most detailed information. One thing more which has occurred to me as tending to exhaust the capital of the country is, the present amount of the Irish sinking fund. If I view its effect rightly, I think it has a tendency that the government never intended or contemplated, altogether different from the one in England ; that it has the effect of sending money, or produce of an equivalent amount, out of the country, without receiving any substantial return for it : it strikes me that, apart from the general subject of taxation, this has an intimate connexion with the objects of your inquiry.

The Right honourable *Maurice Fitzgerald*, Knight of Kerry, a Member of the Committee ; Re-examined.

Right hon.
M. Fitzgerald.

(3 July.)

YOU have stated, that in one district of the county which you represent (the barony of Corkaguinny) the linen manufacture is more extensively practised than in the other parts of the county ?—Yes.

What is the state of that county with regard to its internal tranquillity ?—I think it has been the most permanently tranquil district that we have.

Do you attribute the permanency of the tranquillity of that barony in any respect to the more extended occupation of the people ?—Very much ; at the same time the human food is obtained there at a very cheap rate, from the abundance of manure that our coast is surrounded with.

To what manure do you chiefly allude ?—Sea-ore and sea-sand, in great abundance and perfection.

Are the peasantry of that part of the county aware of the benefits derived from this manure ; do they themselves make any very considerable efforts to procure it, and extend it throughout the barony ?—They carry it to great distances up the high hills upon their backs, which I think is the best proof I can give of their sense of the value of it ; they carry it two or three miles in baskets on their backs.

Does that observation apply to any of the other peninsulas of the county of Kerry which project into the Atlantic ?—I think at all the other districts the manure is carried on horseback ; but there is a general disposition to employ those manures by the population, and they exactly use the means that are necessary in their respective districts : it is calcareous sand.

You have stated that the population of the county carry them considerable distances on their backs, and by horse-loads, does that arise from any want of roads throughout those districts ?—There is a considerable deficiency of roads in the directions in which those loads are generally carried, that is, from the sea-shore to the interior ; the lines of road are generally from one principal market-town to another, which are transverse to their lines. Those manures have been employed with great effect in that district : there is a large tract of ground that has been generally

Right hon.
M. Fitzgerald.

(3 July.)

generally employed alternately in the production of potatoes and wheat; they are both in great abundance through the means of those manures, and the soil is supposed to be improved, or at least as productive as at any former period.

Do you conceive that the extended use of this manure has led to an additional means of giving employment to the people?—I think it has; but that employment is chiefly directed to the production of food for themselves in their present state.

Do you conceive that the use of those manures could be further extended if there were more communications, and communications of a better description of road through those mountain districts?—Very much.

Then the Committee may understand, that a more general opening of those districts by means of roads will not only give employment to the people in the making of the road itself, but would give additional agricultural employment of a permanent nature?—I think the execution of roads on a judicious system, the opening of the coast to the interior, would act most beneficially; increasing the production of food and employment of the people, to the very beneficial purpose of facilitating the produce, which is at present very much locked up. From the want of exports, there is very little effort and labour applied to the production of alternate crops of corn: it is almost limited to the production of food for the population; but there is an almost unlimited power of production of grain where those manures are applicable, if there was an increase of demand, which export alone can give.

Do they grow many potatoes there?—Immense quantities of potatoes, much beyond their own consumption; they apply them very extensively to the feeding of pigs.

What do they do with the potatoe soil afterwards?—They do not take more grain off than is absolutely necessary to prepare it for potatoes.

What do they do with that corn?—They grow as little corn as possible, in the present state of things.

In some instances, is not the produce of those districts taken at very great loss to very distant markets; the question refers particularly to butter?—The butter of Kerry is almost entirely conveyed by land-carriage to Cork, at the distance of from fifty to seventy miles.

Do you conceive that the opening of roads from the interior to the harbours which exist upon the western coast of Kerry, might produce the establishment of places of export within the county itself, which would materially increase the industrious occupation of the people, by diminishing the expenses to which they are now subject, in conveying their produce to a distant market?—I am convinced that the formation of harbours, which only require some works of no great extent, availing themselves of their natural advantages and other circumstances in that respect, would give an immense impulse to industry, and an extension of employment to the people. I believe that the expense of conveying the butter of Kerry to the distant market of Cork, cannot be estimated at less than 10s. a hundred on the average.

What per-centage would that bear on the present price of butter?—There is some very particular information given upon this subject in the Reports of the Commissioners of Bonds in Ireland: on the subject of Iveragh, in Kerry, the loss sustained by two mountain baronies, by the use of their horses in conveying butter to Cork, instead of being employed in the diffusion of manure in the same space of time, amounts to 40,000*l.* a year.

Are you a member of the Board of Fisheries in Ireland?—I am.

As a member of the Board of Fisheries, has your attention been particularly called both to the expense at which harbours may be improved or created, and as to the beneficial effects which may arise from such an expenditure of capital?—We have made very extensive inquiries upon that subject, and we have been engaged in a survey of the coast of Ireland, which has furnished us with a great deal of local information. There is a very great deficiency of artificial harbours all round the coast of Ireland, and we have reason to believe that a great deal of good may be effected, not merely as to the safety of vessels and the encouragement of the fisheries, to which such ports are absolutely necessary, but also with respect to the transport of the produce of the country, which the creation of such small harbours would facilitate; and that such benefits may be attained to a very great extent by the creation of piers, even at the moderate rate of 500*l.* per pier.

Have there been any experiments tried by the Board of Fisheries, which have proved, in their results, the correctness of the opinion that you have now stated to this Committee?—In the course of the late distress we were induced to turn our

Right hon.
M. Fitzgerald.

(3 July.)

efforts towards the districts particularly affected, and by the liberal aid of the London Tavern committee we were enabled to build about thirty piers, not exceeding the rate of 500 *l.* per pier, round the coasts of six counties on the south and west of Ireland; and even before they completed some of those piers, their good effects have been exemplified by the saving of several vessels in extreme distress. With respect to their use in the fisheries, it is the conviction of the board, that without such aid it is totally impossible to calculate upon any effectual extension of the fisheries on the coast of the ocean. The surf is so continued and so violent along that entire line of coast, that even in the natural harbours it is a matter of extreme danger, even when the weather is completely calm, to land or launch a boat, in a degree which nobody can conceive who has not seen it. What is called a ground swell is very common along those coasts; and even when the surface of the ocean is calm, it rises on the shore with such immense force that it requires a great number of men, and very great dexterity and labour, to launch or land a boat with any safety; for if her side turns to the beach even for a moment the boat is almost certain to be dashed to pieces: you are obliged, in common cases, to get the crew into the boat on the land before she is launched, and she is then launched by the help of a great number of additional persons, who get her on the surface of the advancing wave which is to take her back, in the hope of her not being dashed in its reflux upon the shore. This is a matter of such extreme difficulty to the fisheries, that I feel convinced, without some artificial aid given for landing and embarking, that it is quite impossible to suppose that poor people can ever endure the extraordinary wear and tear that such causes produce.

Do you conceive that the continued establishment of piers and the improvement of harbours would lead to more enlarged profitable employment of the peasantry of Ireland in the fisheries round the coast of that part of the United Kingdom?—Unquestionably; it may be better for me to explain, in reference to the last question, the difficulties the fishermen are under: the trade of fishing in its present imperfect state has, in Ireland, no division of labour, the same person fishes and cures his fish, both under extreme difficulties; they go out in small boats, which are launched, subject to the dangers I have described, and as soon as they have got a boat load of fish, if they are successful, they are obliged to return, and at similar risk draw their boat up out of the reach of the tide, in order to land the cargo; the boat suffers in each of those operations, much time is lost, and the fishermen precluded from remaining on his bank, as he ought to do, while fish continue, and sending home what he has got to be landed, as it is in other places, at the pier in safety, without difficulty, by carrier-boats. Those impediments have hitherto precluded any extension of the fisheries in those districts adjoining the ocean; and I am convinced that until piers are extensively established, we can hardly conceive that a real fishery in that district has commenced.

If piers were established, from the information you have received, do you conceive that the ocean adjoining the coasts of Ireland would admit of an extended take of fish?—We have reason to believe, that at a certain distance from the coast, there are banks affording inexhaustible supplies of fish, abounding in the best cod, haddock, hake, ling, and other kinds, suited for curing.

Are herrings taken upon that coast?—Herrings are exceedingly precarious, they are sometimes extremely abundant, in an abundance for which the fishing population is very little prepared either in the means of catching or curing. In the course of last year, at Galway, there was so abundant a take of herrings, that the demand raised the price of salt from 6 *l.* to 20 *l.* a ton; great quantities of them were thrown away, or employed as manure, and that is no uncommon case along the western coast of Ireland; in many cases abundance of herrings are surrounded in the creeks and bays of Ireland, without any means of curing them at all, which are all wasted, except such as can be consumed fresh. The abundance of herrings on the western coast is occasionally such as to tempt the more expert fishermen of the eastern district of Ireland to go round the entire northern coast to fish on those spots, while, from the barbarity of the people, they are subject to great risk as strangers, if they are obliged to land for the purpose of curing any part of the cargo; and this, upon coasts where, from poverty and ignorance, no effect is made by the native population to catch the fish at their own doors.

If more were taken, do you conceive a market could be procured for its sale in Ireland?—Unquestionably, because three years ago we imported 70,000 *l.* worth of herrings from Scotland. There is at present in Ireland no market of export for fish;

fish; the home consumption of fresh fish occasions the principal demand; the efforts of the fishermen who are best equipped in vessels and apparatus, are almost exclusively confined to the supply of the fresh fish market.

Right hon.
M. Fitzgerald.

(3 July.)

From whence do you conceive to have arisen the want of a market for the export of fish?—I do not conceive that the internal consumption is as yet adequately supplied, and that that must precede any export. The trade of curing is very ill understood in Ireland as yet; there has been a recent establishment of a Scotch house at Galway, one of the most extensive fishing stations of Ireland, which is calculated to produce great benefit, and lead to very great improvement in the system; and the people of Galway themselves acknowledged to me, in the course of the last year, when I went down on the subject of the fishery, that they really had never known any thing of curing before they saw the system practised at that house. The proprietor had gone to a considerable expense in buildings for the purpose, and the establishment of a cooper to make barrels of native timber, which was quite a novelty in Ireland; he suffered great discouragement from being precluded from bounty, by the circumstance of his having been obliged to cure his herrings in bulk, from the deficiency of barrels, and means of complying with the law in that respect. We find, that in these respects the Scotch fishery has a very great advantage over the Irish. The quantity of timber applicable to these purposes in Scotland enables them to produce a barrel, according to our estimate, at 2s. 6d. less in cost than it requires in Ireland; the Irish being generally obliged to form them of imported staves; and the law requiring that the barrel shall be a new barrel, it causes a difference so considerable as to discourage our people from any effort to obtain the bounty which the law professes to hold out for the encouragement of the fisheries.

Do you think that a reduction of the duty on staves, which would facilitate the introduction of foreign staves into Ireland, and lessen their cost to the consumer, would have a beneficial effect on the encouragement of the fisheries in Ireland?—If the bounty continues limited to fish cured in barrels, it unquestionably must, for it would reduce greatly the price of those barrels; at present the fisherman hardly thinks it worth his while to pay the expense of a barrel for the amount of the bounty that he would be entitled to thereby.

Do you conceive that the limitation of the bounty to fish cured in barrels, is a limitation which it is expedient to continue?—I think it is extremely discouraging to the Irish fishermen.

Was not the circumstance, of Ireland having imported the quantity of herrings which they did from Scotland last year, caused by the Scotch mode of saving fish coming under bounty, while Ireland, not having saved fish in that way, did not come under the benefit of the bounty?—The Scotch had at the time the benefit of the present system of bounties; they fished at a great advantage compared to our fishery, and they were able to undersell us. It was the first year of the establishment of the new system of fishery laws in Ireland, and under the encouragements given since, the importation of Scotch herrings has gone on gradually diminishing, and our production has been increasing since that period; we sent a few cargoes to Scotland this last year.

You said that the boats that went to fish lost a great deal of time by not having carrier-boats; would not the time of that carrier-boat be lost while the other was fishing; if you gain the time in one boat, would not you lose the time in another?—I conceive the improved system of fishery to be, that the fishing-boat shall remain upon the banks permanently fishing; that they shall be supplied with food, and whatever they may require, and that the fish shall be sent by carrier-vessels to the parties concerned in curing, from time to time, without losing the service of the improved fishing boats; that is the Dutch practice, and the French practice, and I believe it is the practice on the English coast.

Is there not, generally speaking, some island adjoining the fishing grounds?—I consider the proper grounds for fishing to be at a considerable distance from the coast, generally speaking; there are, occasionally, very fine fisheries discovered so contiguous to our shore, that you may land without much loss of time and inconvenience if the harbour is sufficiently safe; but, generally speaking, I think the best fisheries which have been yet ascertained to exist are at a considerable distance from the coast, and that the proper mode is to continue on those banks permanently, as long as the weather and the season permits.

You would have carrier-boats then?—I think that in the improved system of fishery

Right hon.
M. Fitzgerald.

(3 July.)

fishery, the catching and the curing of the fish ought to be separated. The business of fish-curers ought to be established along our coast; and that they should afford a ready and immediate market, and the mere fisherman should have nothing to do but to catch his fish.

Do you not think, that if there were some means taken to have a large quantity of salt always ready for the fishermen all along the coast, it would be of great advantage?—I think it of the utmost importance that depôts of salt should be established at different points along the coast where, from the remoteness of the towns, it is at present almost impossible for them to procure salt upon any reasonable terms.

Do you conceive that an improved mode of curing the fish would lead to an extension of the export trade?—I think that the first object is to supply the home market, and that that in itself affords a very extensive source of employment; for improved modes of curing will afford to the catholic population of Ireland a very valuable and abundant increase of food; at the same time I think that an improved system of curing would entitle us, in some districts, to look very shortly for an extended export dealing in that article; and I have reason to believe, that the sorts of fish with which the ocean abounds on the western coast of Ireland, would find an almost boundless market on the coasts of Spain and the Mediterranean countries, for the fish cured on the Irish coasts, in the supply of which no other country could compete with Ireland. Herrings and the small fish, and even the larger fish cured for distant markets, are cured with such a quantity of salt as to render them unpalatable; whilst, for the purpose of curing the cod, ling, hake, glasen, and other fish on our coast, a much more moderate quantity of salt would be required, sufficient to carry them to the coasts of the countries I have mentioned, where they would sell in preference to the more salted description, and would be considered a comparative luxury. The cod on the coast of Ireland is very superior in quality to Newfoundland cod; what I mean is, that the short run from Ireland to those countries would enable it to be conveyed fresher; and the situation of Ireland, lying to the windward, would afford a more certain run to the markets in question than could be expected from the ports in the channel, or the narrow seas.

Do you think, that if the fish were ever so cheap the poor people would be able to buy them?—The poor people buy fish in great abundance, at this moment, in the neighbourhood of fisheries. It is obvious that a poor man contiguous to a fishery will always save the cost of the carriage; during the spring they live very extensively upon fish.

Your observations with respect to fisheries apply to the whole of the western and southern coasts of Ireland?—I think they do.

Do you consider that any other measures could be adopted for the encouragement of the fisheries of Ireland, besides the opening of mountain roads, and the establishment of piers and harbours?—The total abolition of the salt duties would be very important; for at present, though the law professes to exempt the salt employed in fisheries from duty, and that a strict compliance with forms can obtain that, those forms are so complicated, and so difficult, that the poor fisherman pays the duty rather than avail himself of the exemption.

Are there any other difficulties to which the Irish fisherman is exposed, in the want of piers and harbours, which cramp and limit the exertion of his industry in his trade of fishing?—Bad quality of boats and implements of fishing, and an inability, from poverty, to supply themselves with better; and a deficiency of timber, which is almost uniform on our coast.

What is the description of boat and of implements which are now used in the fisheries of Ireland?—Nothing can be more wretched than the general description of boat used along the western coast. On the eastern coast, where an encouragement has been derived from the tonnage bounty during many years, and in some of the southern harbours, as Kinsale and Dungarvan, a very good description of boat is found. That advantage is limited to towns where some capital exists; and the employment, especially on the north-eastern coast of Ireland, has been stimulated very much by the tonnage bounty.

Do you conceive that that system of tonnage bounty, as opposed to the system of production bounty in fisheries, has been attended with any other beneficial consequence, except this to which you have alluded, in the employment of a better description of boat?—I think that the system of tonnage bounties has been extremely mischievous.

In what respect?—I think it has deceived the government and the public, by the supposition

457

*The Right hon.
M. Fitzgerald.*

(3 July.)

supposition that they were encouraging the fishery, while they were applying the public funds merely to equip the vessels in a particular manner; but that it really acts as a discouragement to the internal fishery of the coast.

Do the same observations apply, in your opinion, to the production bounty?—The whole system of fishery laws limited those encouragements to the tonnage bounty. The reformation of those laws in the year 1819 introduced, for the first time, the production bounty on the Scotch model; and although the present laws have been framed rather in reference to the practice of the fishery in Scotland than what appears to me to be its peculiar character in Ireland, yet already much good has been done by this partial correction of the old system. The application of production bounty has, even under the difficulties which I have before stated, already produced a considerable extension of the coast fisheries. It has been the disposition of the Board of Fisheries, as much as possible, to correct in practice the abuses which have grown up under the tonnage bounty system; but it seems to be radically bad in principle, and ought, perhaps, to be altogether abolished, as soon as it can be done with due consideration for the capital at present vested in it. That bounty was given without any reference to the quantity of fish produced; and it is obvious that the circumstance of such production of fish offers the best security, that the time and the capital of the fisherman has been well employed.

Have any instances come within your knowledge, from whence it appears that the difficulties to which the fishermen are exposed in repairing their boats operate as a discouragement to the profitable employment of the poor in fisheries?—I would say generally, that with the exception of a few harbours on the eastern and southern coast of Ireland, the poor fisherman is in a state of poverty which precludes the pursuit of his occupation, except under the circumstances of those occasionally abundant supplies of fish which come almost to his door. The trade is, therefore, not carried on at any distance, or permanently to any profitable purpose. Under some circumstances of extreme distress, we were induced, with the aid of government, to apply relief in particular districts. A sum of 2,000*l.* from government, aided by an equal sum from the fishery board, was sufficient in one case, by a very judicious and economical application of it, to re-establish and equip all the fishing boats of an extensive tract of country, and to build some new ones, and to enable a great many persons, during the last season, to pursue the fishery in a profitable manner.

Have any experiments been tried, by means of loans and advances to the fishermen, to increase the facilities with which the repair of their boats may be effected?—The London Tavern Committee, after communication with the Board of Fisheries in Ireland, were induced to apply a certain fund for aid to poor fishermen in repairing their boats; that fund was placed at the disposal of the Board of Fisheries, and they have devolved the administration of it upon committees of gentlemen at different points of the coast, to be applied in loan, through the medium of materials, for the repair of boats; and it has been found, that by applying such limited funds towards procuring materials from a distance, that the articles have been furnished to the poor fishermen at a tenth part of the cost which it would have required them to pay on the spot. The coast of Ireland may be said to be wholly destitute of timber; and it very often happens, that a poor man who may require a bit of timber, or some iron for the repair of his boat to enable him to go to sea, may have a distance of forty miles to travel before he can find the article that he wants; and yet such want may have totally disabled his boat for the whole season.

What part of the coast do you allude to?—The whole western coast of Ireland.

Should not planting be more encouraged?—Certainly.

Then it would cost more than 3*s.* for the carriage of the timber?—Unquestionably. We have furnished along the coast now, through several districts, supplies of crooked timber, hemp, cordage, sailcloth, iron, spars, oars, fishing-hooks, and other implements, at a great saving. The committee furnishing the people with them under one-tenth part of the cost which the poor fisherman would have to pay if he supplied himself.

Where has this experiment been tried?—It has been tried on the coast of Mayo, Galway, Clare, Kerry and Cork. In Galway and Mayo it has been conducted through the officers of the fisheries; and in Kerry and Cork through local committees of gentlemen resident on the coast.

In which case do you conceive it to have been tried, with the greatest chance of a beneficial result?—There has been hardly time as yet, to speak with certainty upon that subject; it has been most rapidly and extensively applied, where it was exer-

*The Right hon.
M. Fitzgerald.*

(3 July.)

cised through the officers of the fishery board; whether it shall prove to be with equal safety as in the other cases, will remain to be proved.

Do you conceive that a more extensive command of funds, to be employed in a similar manner upon the same principles, would be productive of beneficial results to the fishing interest of Ireland?—I am convinced that no more immediate or charitable application of funds for the employment of the poorest description of our population can be received, than by an extension of the principle of loans for the repair of fishing boats; such is the poverty, not merely of the fishermen but of the resident farmers, and of the owners of the soil along the coast, that very little aid can be derived from those quarters.

What amount are you looking to with respect to aid that could be given?—The funds placed at the disposal of the fishery board, by the London Tavern Committee for this purpose, only amounted to 2,000*l.*

Do you think a larger amount might be beneficially employed?—Very beneficially employed.

How much larger?—I should think that the sum of 10,000*l.* applied on the same principle, would give a very great impulse to the fishery all along the coast of the distressed districts of Ireland.

Would that be a temporary measure, or would it require to be continued?—I think the application of 10,000*l.* would produce such an effect upon the industry of the fishermen, that you might calculate upon a reproductive power in the fishery itself afterwards.

Do you think the persons borrowing that could repay both capital and interest upon it?—I do; the loan I have alluded to was strictly applied in that way; to be repaid both principle and interest.

In what time do you think it will be repaid?—In a year.

Veneris, 4^o die Julii, 1823.

RICHARD WELLESLEY, ESQ. IN THE CHAIR.

*Mr.
J. Brakenbridge.*

(4 July.)

Mr. John Brakenridge, called in; and further Examined.

YOU are aware of certain calculations having been handed in by Mr. Owen?—I am.

Can you give the Committee any evidence as to the correctness of those calculations?—I think they are generally correct; the produce stated in those calculations is much below what might be realized, with respect both to quantity and price; the calculations were made at the lowest prices of the lowest markets in any of the districts through which we travelled.

When you speak of the accuracy of those calculations, do you mean to include the estimate of price of broad cloth, linen, leather, and things of that description?—Yes. From that quantity of raw material, at least, that quantity of manufactured commodity might be produced of that value; this is founded upon information which I had from manufacturers in Ireland.

Do you know any thing of the calculation made of the expense of building a village for one thousand persons, including church, chapel, places of worship for dissenters, schools library, and inn, &c.?—I do; I have looked on every item of it, and I know the individual who made that estimate, who is a very eminent person in his profession.

Were they made according to the rate of prices in Ireland?—According to the rate of prices in Glasgow, which are generally higher than in Ireland, so far as labour goes.

So far as provision goes?—That is higher in Glasgow than in Ireland.

Building materials are more abundant in Ireland?—With the exception of timber, and that is imported into both countries; but lime is more abundant in Ireland than in Scotland. Stone is very abundant in every part of Scotland.

Is five per cent a fair charge for wear and tear upon buildings?—The whole is taken at ten per cent, which is considered a fair charge upon the original cost.

Five per cent for the interest of the money, and five per cent for wear and tear?—Making ten per cent; when buildings are well executed, seven and a half or eight

459

Mr.
J. Brakenbridge.

(4 July.)

eight per cent is considered a fair return ; the reason of this separation was to make a sufficient allowance for the rate of interest in Ireland, which was taken at six per cent, but since the calculations were printed in England, it was divided into two charges of five per cent.

Then you think five per cent is an ample allowance for wear and tear ?—It certainly is ; if five per cent is charged for interest upon capital, and eight per cent is considered as a fair return ; then five per cent must be a fair allowance for wear and tear upon the buildings.

Is 750*l.* a fair estimate for the supply of implements, necessary for one thousand acres under spade cultivation ?—The Committee will observe that machinery is not included in this estimate ; this is merely for the working implements of the labourers for agriculture and spade husbandry, which I made myself, founded upon long experience.

Were these estimated according to the Glasgow price, or founded upon the prices of such implements in Ireland ?—That estimation is founded upon the prices in the north of England, in the county of Durham.

If instead of spade cultivation, the common mode of cultivation were adopted, would the implements be of greater value ?—The whole charge for implements would be more if the common mode of cultivation, by the plough, was adopted.

Is this estimated value of machinery for the woollen and linen manufactories, bleaching and tanning, a fair estimate ?—It is at least thirty per cent above the value of such machinery in Ireland.

Is it your opinion, that for the produce obtained, spade husbandry would be the most economical and advantageous ?—Upon most soils it certainly would ; upon all soils of a heavy and retentive description.

Could it be advantageously employed in Ireland ?—I certainly think it could.

Do you think upon the whole, after looking at this account of Mr. Owen's, that the result is correct, and would be realized ?—I think that a much more favourable result would be realized.

What meaning do you apply to the word favourable ?—That a greater quantity of the various articles would be produced for the same charge. I think that a most ample allowance is given, taken altogether ; perhaps there are some items on which there might be a difference of opinion, but taken altogether, I think a most ample allowance is made ; and the produce is taken considerably under what would be realized both in quantity and value.

You think the surplus produce of this society would actually sell for 31,000*l.* in money, as stated under the second calculation ?—I do ; where the whole of the people are employed in agriculture, and manufacturing the whole of the produce.

You think that sum of money would be realized by the sale of the surplus produce ?—It would, at those prices stated, which are under the current prices.

Would not the success of the scheme depend upon the fact, whether it did or did not sell for that sum ?—I think not ; I think that the scheme would be successful whether the surplus sold for that sum or not.

Do you think it would be of any importance for what sum it sold ?—I do not think it would be of much importance.

Inasmuch as a part of that surplus produce must be exchanged for coals, iron, copper, sugar, spirits, and various other commodities, would it not be essential that the produce should sell for a high money price ?—It does not appear to me to be of much importance what quantity of money is required to represent the value of any commodity, provided the price of those commodities which it would be necessary to purchase, fell in an equal proportion.

Supposing those commodities not so to fall, it would be very material that this monied sum should be realized ?—It certainly would ; but we find that the money price of different commodities generally equalize ; that is, they come to the same relative value.

If there were a very abundant season generally throughout the country, might not the price of this surplus produce be very much diminished, although the prices of those articles which have been enumerated should not vary ?—Yes ; but that is on the supposition of a greater quantity being produced ; of course the same amount would be obtained, besides, I think it sufficiently shown in these calculations, that a working population of one thousand people are independent of those articles which have been enumerated ; that they would be able to supply themselves with all the

Mr.
J. Brakenbridge.

(4 July.)

necessaries of life, and whatever surplus they had to dispose of would be a real surplus, after they are provided for.

Would they be able to supply themselves with iron, coal, copper, and sugar, and various other commodities?—Such commodities as the society would require to purchase are included in the annual charge, which is deducted from the value of the surplus produce before the balance is ascertained.

Would they not have many fixed payments to make, such as interest of money and rent, and other fixed ready-money payments?—With respect to rent, there is a general inclination among agriculturists to obviate that fixed payment; for instance, in taking a farm, it is generally considered desirable, that the rent should bear reference to a certain quantity of the produce.

In the calculation made here, is not the society bound to a fixed money-rent?—Certainly, but that is made to show that they would be enabled to meet all demands that could possibly come against them; if we suppose that the value of their surplus produce was to be much diminished, this fixed payment would be diminished in the same proportion.

But not till the expiration of the lease?—Not without the provision that I have just now mentioned.

But does that provision enter into this calculation which is now before the Committee?—These calculations are made upon the present price of land and produce.

If there were a great fall in the value of this surplus produce, owing to an abundant supply generally in the country, and this society were under fixed money obligations for rent, for interest of capital borrowed for the purchase of those commodities which would be indispensable to the community, would they be able to make all those fixed payments?—I certainly think that they would be much better enabled to meet those fixed payments than any other class of the community.

Why would they be more favourably circumstanced than all other persons having fixed payments to make?—From the advantages that they would derive from their superior arrangements both in producing, manufacturing, and consuming.

Would not the prosperity of one year very materially differ from the prosperity of another?—I certainly think that it would.

Such a society then is not entirely free from those contingencies to which society is at present exposed?—Not altogether.

You had occasion to ascertain the prices of provisions in Ireland?—I had.

And what part of Ireland?—In the part of Ireland that I named in my former examination; from Belfast, all along the east, and round to the south-west of Ireland.

The Right hon.
Maurice Fitzgerald.

(4 July.)

The Right honourable *Maurice Fitzgerald*, Knight. of Kerry, a Member of the Committee, further Examined:

CAN you give the Committee any further information about the system of charitable loans?—If the object of inquiry is to know whether I consider, in the present state of Ireland, gratuitous donations or loans are most beneficial, I have no hesitation in saying, that I am sure nothing is more necessary in Ireland than to excite independent exertion on the part of the population; they have been too much dependent upon occasional relief and charity already. I have endeavoured to continue the application of the bounty offered by the London Committee, in the most strict and severe manner as a loan, to be repaid, and not at all to break down the principle in any case, even under the strongest appeals to humanity; I consider the principle so important.

Have you found the loans repaid?—I do not think there is any description of relief to which the loan system can be so effectually applied as to the repair of fishing boats, and aid to be given to fishermen.

Is that the way in which the 2,000*l.* of which you spoke, has been actually applied?—It has not been all applied; but it has been appropriated to that.

Is it appropriated by lending it directly to the men who carry on the fishery, or in any other way?—There is no advance of money made at all to the parties; they have expended a large fund in procuring the materials for repairs at the most advantageous places, and conveying them round the coast to the points where they may be required, so that at several stations on the coast there are now little depôts of the materials most essential to the repair of small boats.

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Those materials are valued in money, and each person using them is accountable for the value of what he uses?—They are charged to the committees at the money price, and they are lent at such rates to the poor fishermen as will cover the expense of transport, and the repayment of the principal and interest in a year.

You would not think such a plan advisable, as a general principle, of assisting any part of the community with government loans or charitable loans?—I have very strong objections in principle to such a plan, and I think nothing but the distress of Ireland can justify a deviation from that general principle.

Must not those funds be accumulated by demands on some other classes of the community?—Unquestionably: the fishermen, and those upon whom they are immediately dependent, in the present state of Ireland, are quite incompetent to procure the necessary repairs for the conduct of the fishery.

But if those funds are abstracted from some other parts of the community, may it not happen that you do as much disadvantage to some particular classes of the community by withdrawing those funds, as you procure advantage by the employment of them in some new channel?—I conceive that the contributions for such purposes will naturally be derived from the wealthy classes of society.

Supposing government afforded advances by means of exchequer bills, would you say that such a contribution came from the wealthy classes of society?—Whether it did, or was levied in the mode of taxation resorted to by the state, I cannot conceive that any possible evil would be derived from the levying that contribution which would not be amply compensated by rendering more productive the industry of so important a class of men as the fishermen on the western coast of Ireland.

Do not you think, that when the people of an extensive empire are left to their own exertions that they will of their own accord seek to place their funds in those occupations which are most advantageous to them, and therefore most advantageous to the community generally?—In a natural state of things, in a well constituted empire, I should agree in that principle; but I do not agree that Ireland is in a natural state; Ireland is impoverished by withdrawing a great portion of its income entirely from it: that is not the state of things in England or in France, or scarcely any other country in the world.

Suppose England were to complain that in consequence of the absentees from England, who are now on the Continent and spending their revenues there, that some parts of this country were in a state of distress, would you advise a similar measure of affording relief by means of exchequer bills as a remedy for such distress?—The late Chancellor of the Exchequer thought at one time of taxing absentees from England: if I could conceive any portion of England reduced to the same state of distress that a great part of Ireland is now by withdrawing the income of the land, I should be disposed to extend to it the same species of relief.

Are there not many causes in Ireland which concur to produce distress, which would not affect England?—There are a great many causes, though not so peculiar to Ireland as the one I have alluded to. With respect to a question which I was asked at the beginning of my examination yesterday, respecting the great advantages to be derived by opening lines of road from the sea-coast to the interior of the country, I would beg, as a more satisfactory course, to refer the Committee to a Report, prepared in the year 1819 by me, as chairman of a committee on the state of employment of the poor, which sat in that year, and which report is accompanied by an appendix, containing very useful information upon all those points. We examined upon that occasion two of the ablest engineers in this country, Mr. Nimmo and Mr. Telford: Mr. Telford is well acquainted with the roads in the Highlands of Scotland; and Mr. Nimmo, being engaged in a survey on the coast, and being acquainted with the fishing districts, I should think, if the Committee can, they should procure the re-printing of that Report; the title of it is, "Committee on Contagious Fevers, and the Employment of the Poor." Another point that I wish to suggest is, the great advantage which would be derived from the introduction, upon various parts of our coast, of experienced fishermen from other places. It is quite extraordinary what a gross ignorance prevails in the mode of fishing practised by our population. I had recently an opportunity of knowing that some Devon and Cornwall men, employed as water-guard upon the coast of Kerry, have been instrumental in improving the mode of fishing of the people about them. A boat of those water-guard men went out accompanied by three boats of the natives, and the water-guard boat caught ninety-six fish upon the same ground, and in the same time, that the three boats caught five fish: they found the people of the country totally ignorant

The Right hon.
Maurice Fitzgerald.

(4 July.)

ignorant of the mode of tying hooks and handling the lines, and fishing in all its branches.

Would you have government provide men to give that sort of instruction, or would you leave it to the course of events, and the natural effect of the interest of individuals?—I believe if it is left to the natural course of events, a century will elapse before it is introduced to any extent. I made a proposition about the year 1804, when the Dutch fishermen were extremely anxious to transport themselves to these countries with all their apparatus, and capital, and families, to escape the French tyranny that then existed in Holland; and I suggested the giving them that relief, and establishing a few of them on different parts of our coast, and employing them in introducing that profitable branch of industry according to the Dutch method. I have no doubt that if that had been acted upon to that extent, we should have had all along that coast a productive and successful fishery. I believe it is in evidence that the great improvements that were made in the Scotch fishery were derived from the suggestions of one Dutch prisoner of war whom Lord Melville released from prison on condition that he should instruct them in the Dutch mode of fishing.

Are you not showing, by the statement you have made, that it is very easy for an individual to procure this advantage to his country?—I do not think that the proposition with respect to the Dutch fishermen can be acted upon by an individual, supposing individuals had the power; in order that it should strike them they should be resident near the coast, which is very little the case on any part of the coast of Ireland.

Would it not repay government?—I do not conceive that the principle is at all objectionable of what I have mentioned. I rather think that if people were to examine into the origin of the great manufactures of England, on which the national wealth is now so mainly founded, you would find that some of the greatest manufactures are derived from the means taken by the then government to protect and encourage persecuted manufacturers from other nations. I believe your cloth, your silk, your linen, and I think it very likely your earthenware, are owing to that very same interference with private transactions on the part of government, by protecting foreigners, and applying the national funds to the establishment of those foreigners in our country in those trades; and I cannot conceive that it could be more advantageously applied in any department than in the fisheries, or at less expense to the state.

Do you conceive that the principle of charitable loans could be beneficially applied to other sources of industry in Ireland besides the fisheries?—Yes; it is acted upon in the application of a fund furnished by the London Tavern Committee in advancing loans for repayment of the materials and implements requisite in the woollen and linen manufactures; and we have every reason to suppose it will be attended with extensive good.

Sir,

Lincoln's Inn, 24th June 1823.

"I TRUST that my own interest being connected with the following sketch, has not led me into errors in drawing it up. Independently, however, of individual considerations, the subject is at the present moment one of undoubted and peculiar importance.

"I am informed from landed proprietors in Ireland, that the hitherto small farms of about ten acres, have been, and are in the course of being, consolidated into farms of from one hundred to five hundred acres, and that these *large* farms do not require *many more* men to work them than one of the smaller.

"The consequence of this state of things is obvious; a great proportion of the population is without employment sufficient to keep them from discontent, or even to enable them to procure subsistence. You, sir, do not require me to point out to you the alarming evils which such circumstances must generate, and in Ireland have generated. Employment of the excess of population can alone neutralize the danger; in England, or at home, we cannot find labour for them, without encountering objections as great as the present difficulties of the country; hence we are driven to our only resource—emigration: which to a certain extent, is an available remedy, and it is the subject I wish to suggest to your attention.

"The disposition of a great part of the people to settle in America, is undoubted; and the important question to us is, what amount of money will enable them to do so in our own colonies there? I am aware that the landowners in England, generally, object to facilitating emigration, on the ground that thereby they are sending away candidates for their farms. Such may be the consequence to a certain extent; yet it is an untenable argument against encouraging the poorer classes to emigrate, when their superabundance evidently requires it. As to Ireland, however, this presents little difficulty, for the people whom I contemplate conducting abroad, are only those who may be said to terrify the landowner and his agents, rather than to be desirable competitors for his farms.

I have

463

The Right hon.
Maurice Fitzgerald.

(4 July.)

"I have now to state the expense of settling people in the *upper* part of Upper Canada, and of keeping them six months after they are fixed upon their land; as also the expense of sending out and distributing able bodied men and women as farm and household labourers, over both the Upper and Lower Provinces, according to the *previously* ascertained want in the colonies of this description of persons. In doing this, I copy an estimate drawn up some time since, when it was stated that a number of people were about to be assisted to emigrate to Canada.

	£.	s.	d.
Passage and provisions from Ireland to Montreal	-	6	17 6
Item from Montreal to Prescott	-	-	15 -
Item, from Prescott to York, (the gun boats at Kingston being employed to carry the people)	-	1	- -
Item, from York, till fixed on the land contemplated, viz. on unoccupied tract in the district of London	-	1	- -
A few implements	-	-	12 6
Provisions for six months after they are fixed	-	6	15 -
Total	-	£.17	-

"Total average expense for each person 17*l*.

"At this sum individually, I have no doubt that one hundred thousand people may without any inconvenience be comfortably settled.

"As to the second plan, viz. of distributing able bodied farm and household labourers, married or unmarried, over the two provinces, I think they will not be glutted if twenty thousand be sent to various districts, after a careful examination of the means of employment; and for this purpose about eight or, at the most, nine pounds per head will be found ample.

"For other suggestions on this subject, I take the liberty of sending you my two pamphlets published in 1821 and 1822.

"With respect to the opinion, "that by increasing the population of the Canadas, we shall give a powerful body to the United States," I have only to observe that the experience of my Canadian friends, and my own, have convinced us that the reverse will be the tendency of the measure, many considerations are connected with this point of the separation of the colonies, but looking to the motive arising from personal interests as connected with emigration, it is clear that the increase of inhabitants in Canada will increase the value of our property; an union with the United States would do no more. The accession of numbers of people from Europe will therefore destroy this great motive for a voluntary separation; and it will strengthen us against an invasion.

"That it will be important to Great Britain, that the Canadas shall always remain either her colonies, or a power independent of the United States, must be obvious, if we look at their situations; they are fixed in the heart of an aspiring rival country, and are accessible by water.

"It may not be improper to observe, supposing private persons to advance the money, that repayment can be insured by giving them a proportion of the land, intermixed in small quantities with that of the settlers. In a few years this will more than repay what I contemplate to be necessary for the above purposes.

"I have the honour to be, Sir, your most obedient servant,
John W. Bannister."

"Thomas Spring Rice, Esq.

Chairman of a Committee of the
House of Commons for Inquiring into the
Condition of the Poor of Ireland."

APPENDIX.

Memorial of Provisional Committee of the Hibernian Philanthropic Society.

THE MEMORIAL of the Provisional Committee of the Hibernian Philanthropic Society.

To the Honourable the Select Committee of the House of Commons, for the Relief and Employment of the Poor in Ireland.

Gentlemen,

THE Hibernian Philanthropic Society feel grateful to the Honourable The House of Commons for having appointed a Select Committee to consider and report on the means of providing employment for the poor of Ireland. They are anxious to draw the particular attention of every member of the Committee to the situation of this country. By a knowledge of the existing evils, the dangers which may follow, if not speedily counteracted, will be sufficiently obvious to induce every friend to humanity, but more especially every person who has any interest or property in the country, or any feeling for its inhabitants, of whatever sect or party, to exert himself to the utmost, to meet the emergency and avert the consequences.

It has been estimated, upon information which we fear is but too well founded, that a majority of the whole labouring population of Ireland have not the half of their time employed; they are not half clothed, nor half fed, even with food of bad quality; those who have families though fully employed, cannot maintain and clothe themselves at the low rate of wages which is general in the interior, and the south and west: there being no poor rates in Ireland. If the Committee satisfy themselves, that the fact is as here stated, they must be convinced of the utter futility of all partial endeavours to remove the evil; but when to a knowledge of this state of things is added the consideration, that a people thus circumstanced is rapidly multiplying in numbers, the population having been increased one-half within the last half century, and when the prevailing political discontents and dreadful state of social disorganization are added to the account, the anticipations of every reflecting mind cannot be otherwise than of the worst description.

In the city of Dublin, in a population exceeding two hundred and twenty thousand souls, we see a large portion of the youth rising up under our view, who have no means of gaining a livelihood, save by thieving and prostitution. In every labouring and handicraft occupation there is a large surplus of hands, the decay of business having had a double operation, to drive the adult out of employment, and to prevent the youth from being taken as apprentices. It is true, that our city abounds in charitable institutions, where destitute children are reared in vast numbers, but it is not necessary to remind an enlightened Committee of the House of Commons, that the certain result of all such establishments, when adequate means cannot be provided for their employment, when the children shall have arrived at maturity, is, but still further to add to the pauper population already so overwhelming; the finer feelings of our nature are thus converted into the means of aggravating the evils, under which the country suffers.

The most intelligent sober and industrious individuals of the middle and labouring classes, as soon as they are enabled to collect a small sum which might be deemed sufficient to establish themselves in another country, are in the general practice of emigrating; by this evil the community is deprived of many of its most valuable members, and a portion of capital annually withdrawn; a loss, which is the more to be regretted, as the deficiency of capital is a chief obstacle to the improvement of the country.

We are far from desiring to depreciate the advantages of educating the lower classes of the people; but in a state of society, such as now exists in Ireland, the obstacles to any plan of very general extent are insurmountable; and unfortunately, in one instance, where the attempt was made with some prospect of success, speculative differences, respecting the use of the bible in the schools, have rendered the attempt abortive. It is only by combining education and employment under a system wholly unrestricted in matters of religious belief and discipline, that any effectual progress can be made in the education of the lower classes.

The large sums which have been from time to time most liberally voted by parliament, under various designations, with a view to relieve pressing exigencies, or contributed for the same object by private benevolence, have hitherto proved unavailing; because the source of our multiplied evils being *permanent*, all attempts to divert the current which incessantly flows from it are futile, unless so far as a temporary alleviation of the prevailing calamity may be thereby obtained. Nothing that we have as yet heard of, appears, in our opinion, so well adapted to remove the disease as Mr. Owen's principle of mutual co-operation, applied to the present state of the labouring classes in this country. A small proportion of the sums annually wasted in expedients for temporary relief, would be more than sufficient to make an experiment on such a scale as would, in a very short time, decide the question of its perfect practicability, in the minds of those who still entertain doubts upon that point.

465

As every member of the Select Committee is doubtless already informed of the nature of Mr. Owen's plan of forming villages of mutual co-operation, we shall not occupy its time by dwelling on that subject. On one point only, religion, we shall say a few words; the chief opposition Mr. Owen's plan has encountered having arisen from an ill-grounded apprehension, that the people were to be deprived of their religion if they joined in villages of mutual co-operation.

The Hibernian Philanthropic Association is composed of individuals professing different forms of worship. They are agreed in this respect; that the rising youth should be carefully instructed not to hate each other for difference of religious belief, no more than for differences of belief or opinion upon other subjects; that all should be taught to *practise* the pure christian precepts, "do as you would be done by, and "love your neighbour as yourself." The chief pestilence that withers our country is an unchristian disunion, caused by religious differences. If we can improve the condition of the people, and teach them to *practise* charity and love towards each other; if we can carry into effect an improved system of education extending equally to *all*, but leaving religious subjects to parents, guardians, and clergy, we are strongly of opinion, that they can be made better christians than under the existing state of things.

The circumstances and soil of Ireland offer peculiar facilities for establishing villages of mutual co-operation. There are no great manufacturing capitalists who would be injured by these villages manufacturing for themselves. Where local conveniences might render a situation favourable for particular branches, the villagers might manufacture for others not possessed of similar conveniences, but who might have local advantages of a different kind equally valuable. The labour of these villagers, under judicious direction, would soon create wealth, which would be their own, after defraying the expense of outfit.

The cost of apprehending, prosecuting, and transporting *one* felon, would establish at least *three* families in one of these villages. The expense of the police and criminal jurisprudence of the country is very large, and it is an *increasing* charge. Would it not, as a *measure of economy*, deserve an experiment to try if that expense might not be greatly diminished, if not rendered altogether unnecessary? It is not too much to anticipate such a result if the unemployed, and *now* superabundant population, were placed in the proposed establishments. It would be no unimportant improvement to draw from their comfortless and isolated dwellings a people, who, from local situation and their scattered residences, cannot be controlled by *force*, unless you place an armed soldier in every dwelling.

A large portion of the lands of Ireland are lying waste. The commons, generally sources of litigation and quarrels, might be enclosed, the bogs reclaimed, mountainous districts rendered accessible and cultivated, by employing those who are now occupied in plotting and executing the most appalling crimes. There are, it is stated, two millions of acres of reclaimable bog, of a soil suited to the production of grain; the mountain districts capable of being cultivated, or otherwise improved, one and a half millions of acres; the uninclosed commons a million of acres; in all, above four millions of Irish acres. If a loan of *five millions sterling*, raised at interest at four per cent, guaranteed by government, were applied in the purchase of those waste lands, under the valuation of a jury, and in laying out the same in villages of mutual co-operation; a plan of this kind, seriously undertaken would, in our opinion, pacify Ireland *permanently*, and WITHOUT EXPENSE. The saving to the government and to the public thenceforward must be considerable; and what is still more important, the good example afforded by the new establishments could not fail of having the best effect on the inhabitants of the surrounding neighbourhood.

Laying aside, however, the reasonable prospect of a future saving in the public expenditure, by adopting the improvement suggested, and supposing that it were doubtful whether the principal sum guaranteed by government could be repaid, to what better use could a portion of the national resources be applied than that of extricating millions of the people from a state of misery and suffering without a parallel in the history of civilized nations? Should the Select Committee deem it proper to recommend a grant or loan of money, and thus form a basis for obtaining, by donations and loans from private individuals, such further sums as may be required; the Hibernian Philanthropic Society would most cheerfully contribute their personal and gratuitous exertions in aid of any commission that may be appointed for superintending any plan approved of by government, for establishing villages of mutual co-operation.

Several members of the Philanthropic Society have already given donations of money, and others have subscribed to a loan to the amount of 4,000*l.* for the purpose of carrying this much to be desired object into effect.

Signed by order of the Committee,

CLONCERRY, Chairman.

For Lieut. General *Brown*, Sec^r.

Frederick Homan.

Dublin, 1st of July 1823.

Edward Groves, Sec^r."

Index.

3. Employment of the Poor in Ireland 1823.—Report from the Committee on the Employment of the Poor in Ireland; dated July 16, 1823. (561.)
Sess. Vol. VI. p. 331.

N. B.—The *Figures* refer to the Page of the Report, Evidence or Appendix.

Absentees. Evils of absenteeism, 122. 127. 197—Amount paid by the county of Kerry to absentees, 29—Withdrawal of income a great cause of impoverishment, 22. 197—Tax on, recommended, 123—In England, if necessary, 197.
See also *Distress*.

Accommodation. See *Discounts*.

Agency. See *Relief*.

Agriculture. Want of profit, capital, and knowledge, an obstacle to agriculture, 85—Defective state of, 46. 84. 132—Improved system of agriculture advised for the employment of the poor, 19. 46. 142. 146—System of agriculture adopted, 22.
See also *Machinery*. *Manufacture*. *School of Agriculture*.

Agricultural Implements. Want thereof cause of distress, *Rep.* 8; *Ev.* 19. 28. 46. 132. 141. 159—Very bad, for want of capital to provide better, 159—Mr. Owen's calculations relative to, 195.

Agricultural Interest. Distress of the landed interest; to what attributed, 57, 58. 70. 108.

Agricultural Produce. Fall in the price of, causes the poverty of the landlords, 108.

Anderson, Sir James, Bart. (Analysis of his Evidence.)—Distress in the South of Ireland; anxiety to obtain work, 117. 119—Average price of labour; mode suggested for the employment of the peasantry, 117—Price of coal; mode adopted for the payment of labour, 118—Want of employment the main source of disturbance; evils of consolidating small farms, 119—Proposed settlement in uncultivated districts; clothing of the peasantry; supply of manufacturing implements; flax capable of great improvement, 120—Expenses of repairs; better habitations for the peasantry have a tendency to check population; bad state of the landed gentry; great abatement of rent, 126—Advantages derived by paying the labourer in money, 121, 122—With capital large farms would employ more labour than small farms, 122—Tillage system very much extended during the war; pasture land now most profitable, 122—Population greatly increasing; not so much land tilled as during the war; advantage of the Scotch system of farming; tax on absentees recommended; benevolence of the lower orders, 123—Less people in employ than during the war; benefit of charitable loans, 124.

Artizans. See *Charitable Loans*.

Assessed Taxes. Pressed heavily on the resident gentry and landowners, 106.

Assistant Barrister. Mode of recovering money before the, 110.

B.

Bacon. Making up of the bacon employs a vast number of people, 104.

Bandon. See *Cotton Manufactures*.

Banks. Number of those which failed, 145. 162—Partly caused by fall in prices, 163—Failure of, tended to prevent employment, 106—Caused a destruction of capital, 144, 145—Advantages of a re-establishment of, 164—Provincial banks not allowed to pay interest for lodgments, 167.

See also *Branch Banks*. *Currency*. *Joint Stock Banks*.

Bank Notes. An account of the circulation of, 145—Opinion relative to the value of, 164.—See also *Bank of Ireland*. *Currency*.

Bank of Ireland. No communication between the, and the South, 162—Their circulation of notes far exceeds the country banks, 166.

See also *Currency*.

Banking. Difference between banking as carried on in Ireland compared with England and Scotland, 187, 188

Banking Laws. An alteration of, indispensable, 187.

Bannister, J. W. See *Emigration*.

Banno. School at, the system to be beneficial should be supported by individuals, and not by Government, 106.—See also *School of Agriculture*.

Barter.

469

3.—Report, 1823—continued.

Barter. System of barter which applies to agriculture generally, 119.

Bible. Roman-catholic clergy are opposed to schools where the Bible is read, 155. 168.

Bills of Exchange. Manner in which they are circulated, and at what dates, 162.
See also *Discounts*.

Bleaching Greens. Want of, for linen, 61.

Bog Land. See *Mountain Land*.

Bounty. Tends to the improvement of the linen trade, 59—Linen trade of Ireland might be supported without it, 100—See also *Tonnage Bounty*.

Bourke, General. Letters relative to the state of the poor, 39.

Brackenbridge, John. (Analysis of his Evidence.)—Defective state of agriculture; want of capital; bad effects of the subdivision of land, 132—Establishment of manufactures recommended; population unemployed, 133—Combination of agriculture and manufacture tends to improvement; advantages of large farms, 134. 136—Value of commodities alter with the value of money; quality of soil in Ireland, 135—Land well adapted to the cultivation of flax, 136—Defects in the mode of cultivation, 137, 138—Wretched condition of the peasantry, 139—Evils of payment of wages, 140—To what distress attributed; capital of the country not sufficient, 141—Opinion on withdrawing English capital to benefit Ireland, 141, 142—Manufactures best adapted for Ireland; improved system of agriculture recommended, 142—State of manufacturing establishments, 143.

[Second Examination.]—Examination relative to Mr. Owen's calculations, 194—196—Prices higher in Scotland than in Ireland, 194.

Branch Banks. Establishment of a branch bank in the south recommended, 166.

Breweries. Considerable reduction in the breweries since the fall of agricultural produce, 67.

Bristol Fund. See *Connaught and Cork*.

Browne, Dennis, Right Hon., M.P. (Analysis of his Evidence.)—Causes of the prevailing distress in Mayo; lowness of wages, 45—Desire for employment, 45, 46—Bad system of agriculture; description of the linen manufacture, 46—Want of machinery; growth of flax, 47—Benefits to be derived by English capital; operation of the Linen Board; evils of the paper currency, 48—Fear of investing capital; difference of value between Scotch and Irish property; abuse of the office of sheriff, 49—Difficulties of recovering debts, and causes thereof, 49, 50—Increased demand for Irish linen; effect of redundant population, 50—Plentiful supply of grain; new mode of paying for labour recommended; great want of capital, 51—Advancement of capital by Government recommended; districts improved by making roads, 52—General drainage bill advised; evils of the division of land, 53.

Business. See *Currency*.

Butter. Difficulty of sending it to market on account of bad roads, 24—Evils of the distance of a market for, 189—Amount of loss by present mode of carriage in certain parts, 189.

Building Materials. Mr. Owen's calculations relative to, 194.

Buildings. Mr. Owen's calculation as to the wear and tear of, 195.

C.

Cabins. Easy construction of an abode for the peasant, and of what it consists, 119—Miserable condition thereof, *Rep.* 6; *Ev.* 139.—See also *Population*.

Cahir. Benefit arising from the factory there, 183.—See *Females*.

Callaghan, Gerrard. (Analysis of his Evidence.)—General want of employment; want of capital, 143—To what non-investment of capital attributed, 144—Banking system; operations of the currency, 145—Opinion on an improved system of agriculture; tendency of machinery, 146—Comparison of the operation of the currency in England and Ireland; loss of capital to Ireland by the alteration of the currency, 147—Advantage of resident landlords; advantage of the introduction of capital, 148—Proposed way of raising capital, 149—Want of employment; rate of wages, 150—Middlemen made the best tenants when they had capital; system pursued to check population on small farms; disturbances attributed to high rents, 151—Expenses of the large landowners; Irish landlord exempt from repairs, 152—Mode of paying labourers; evils of the mode of leasing property, 153—Increase of population; emigration from all parts of Ireland, 154—Catholic clergy opposed to schools where the Bible is read, 155.

3.—Report, 1823—continued.

Callaghan, Gerrard. (Analysis of his Evidence.)—continued.

[Second Examination.]—Formula for obtaining money by grand jury presentments, 185—Premiums advised to be given for the establishment of manufactories; manufactures as well as agriculture necessary for employment, 186—Linen manufacture productive of benefit; evils of protecting duties for cotton manufacture; board of manufactures advised, 187—An alteration of the banking laws indispensable, 187—Comparison as to banking in Ireland with England and Scotland; establishment of banks upon the Scotch system recommended, 188.

Canada, Upper. Remarks on the province of, 175-178.—See also *Emigration*.

Canals. Cutting canals recommended as an employment for the poor, 117—Description of merchandize conveyed by, 117.—See also *Waterford Canal*.

Cape of Good Hope. See *Emigration*.

Capital. Indisposition to employ English capital, and causes thereof, 20. 25—Non-employment of English capital principally caused by the disturbed state of Ireland, 20. 110. 142. 144—Evidence as to English capital being applied to the relief of Ireland, 48. 92. 96—Opinion on withdrawing English capital to benefit Ireland, 141, 142—Public averse to embark capital without practical demonstration of success in their undertaking, 100—Loss of capital to Ireland by the alteration of the currency, 147.

Difficulty in procuring capital in Connaught and Munster, 55—Great need of it among the resident gentry and landed interest, 56-58. 132—Evils of the want of, 7. 51. 110. 112. 141. 144—Want of, a primary cause of the want of employment, 143—Improvement of agriculture would produce additional capital, 135—Non-investment of, attributed to disturbances, and difficulty in the means of recovering debts, 49. 110. 142. 144. 164.

Advantages of capital to the employment of the poor, 56, 57. 148. 156—Amount necessary, 94. 96—Proposed means of raising capital for Ireland, and security for the same, 149—Advance by Government recommended, 52—The effect of, in the demand and supply of the linen trade, 115—More productive in Ireland than in England, 144. 159.

See also *Agriculture. Agricultural Implements. Collieries. Fisheries. Linen Manufacture. Small Farms.*

Carrier Boats. Necessary to the improved mode of fishing, 191.

Charity. Number of poor supported by, inconceivable, 108—System of gratuitous relief deprecated, *Rep.* 5; *Ev.* 30. 44. 110. 131. 184. 196.

Charitable Loans. Were expended in labour, 115—Charitable loans very advantageous to the poor, *Rep.* 10; *Ev.* 44. 109—Their adoption throughout Ireland recommended, 124. 198—Benefit derived by charitable loans to the fisheries, 196, 197—Nature of, and to what extent charitable loans are limited, 111—Government loans to the poor recommended as an increase to industry, 84.

See also *Loans*.

Charitable Loan Societies. The establishment at Londonderry found to answer, 44—Loan establishments where situated, 18—The benefit arising therefrom, 18. 124.

Charitable Societies. Relief afforded by the Mansion-house, Dublin, and London committees, and giving employment to the peasantry, 125.

Children. Bad state of clothing of the children of the peasantry, 142—An improved method of employment and education of the poor children recommended, 71.

Circulating Medium. See *Currency*.

Clare. Number of persons relieved in, by the relief committee of 1822, *Rep.* 5.

Clay. Description of that found in county of Tipperary, and neighbourhood of Cahir, 21.

Clearing-houses. Established in Cork during the existence of banking there, 164.

Clergy, Roman-catholic. Marriages and christenings principal part of their stipend, 121—Making them independent would prevent so many marriages, and check the increase of population, 154—Opposition shown by them to the Hibernian schools, 155.

Clonakilty. Introduction of moderate capital has greatly increased the linen trade at, 100—Linen manufacture flourishes at, 150.

Clonmel. See *House of Industry*.

Clothing. Almost all the lower orders make their own, 120—Miserable state of the clothing of the peasantry, 26. 69. 120. 139.—See also *Children. Peasantry*.

Coal. Reduction of the price is a great assistance to the manufacturer, 62—Price of, as imported from England, 118—Railway for conveyance thereof, recommended in the counties of Leitrim, Sligo, and Cork, 21.

Collieries.

Collieries. Not worked for want of capital, 117.

Commodities. Mr. Owen's calculation relative to, 195, 196.

Commonal Rights. Difficulty of extinguishing commonal rights, as instanced in the Sleive Graive mountains, 25.

Conelley, James. (Analysis of his Evidence.)—Rate of wages in Carlow, 65—Want of employment, 65—Depreciation of agricultural produce; better system of farming adopted, 66—Great abundance of food, 67—Advantages of the introduction of linen and woollen manufacture; loan system by Government recommended, 68—Alteration of the currency, 69—Destitute condition of the landed interest, 70.

Connemara. One of the seats of distress, 31—Resort of the disaffected and rebellious, 52.

Connaught and Cork. The Bristol fund was sent exclusively to those places, 115.

Consumption. Examination relative to general produce and consumption, 99.

Convicts. State of, transported from Ireland to New South Wales, 180.

Cork. See *Coal.* *Connaught.*

Corkaguinny. Linen manufacture extensively practised there, 188.

Corn. Free trade in, gave a stimulus to arable husbandry, *Rep.* 7—Plentiful supply of grain; no means of purchasing, 51—Advantage if the English system of averages were extended to Ireland, 124—Disadvantages arising from the sale of corn at certain periods, 162.

Coroners. The unjust exercise of their office, 47.

Cottages. See *Cabins.*

Cotton Manufactures. Cotton manufacture established at Killarney, 21—Manner in which carried on at Bandon and Belfast, 187—Protecting duties a cause of the cotton manufacture not being more attended to, 187.

Country Banks. See *Banks.*

Cultivation. See *Farming.*

Curers. See *Fish Curers.*

Currency. The evils of the system adopted in Mayo, 48—Decision of the Court of Chancery relative to the currency, 48—Great reduction of the circulating medium within the last few years, 63 162—Alteration of the currency a cause of distress, 69—Examination relative to the circulation of notes in the South, 165—Difficulties in the way of obtaining Bank of Ireland paper for mercantile purposes, 166—Amount of circulation necessary for the South of Ireland, 167—Withdrawal of notes by the failure of private banks, 161—Different mode of conducting business, owing to the alteration in the currency, 162—Operations of the currency on produce, 145—Comparison of the operation of the currency in England and Ireland, 147—Value of commodities alter with the value of money, 135.

See also *Capital.*

D.

Dairy Farm. Most profitable of late years, 135.

Debtor and Creditor. Examination on the laws of debtor and creditor, 26.

Debts. The difficulty of recovering debts, and causes thereof, 49, 50. 54. 110—Little difficulty in recovering them during the war; now every difficulty, 164—Money is recovered as easy in Ireland as in England, 110.

See also *Capital.* *Judgments.*

Discounts. Difficulty merchants have in getting their bills discounted in the South, 166—Bankers dislike discounting bills for country gentlemen and contractors at long dates, 186.

Distress. Districts in which it was found most urgent, *Rep.* 4—Causes of distress; mode adopted to relieve the same; where most prevalent, *Rep.* 6. *Ev.* 13. 31. 45. 66. 71. 117. 125. 156—Letters of the bishop of Limerick relative to distress, and means of relief, 34-37—Dr. Trench's letters on the state of the poor in Galway county, 38—General Bourke on the same, 39—Mrs. Strickland's letter on affording industrious occupation to the people, 40-42—The Rev. Robert Kirchhoffer's letter on distress, 42, 43—Rev. Charles Seymour's letter thereon, 31—Depreciation of agricultural produce a cause of, 7. 66—Cause of distress attributed to absenteeism and want of employment, 45. 108. 125. 141.

See also *Peasantry.*

Disturbances. Want of employment the cause thereof, 50. 55. 84. 105. 109. 114. 119. 130—Checked by finding employment for the peasantry, 159—Advance of money the only means of quelling, 114—Conciliating conduct of the landlords a preventive against outrage, 153.—See also *Capital.* *Rent.*

3.—Report, 1823—continued.

Donneraile. For 18 months in a state of rebellion, 121.
Drainage. Necessity of introducing a Bill respecting, *Rep.* 11—Improved system of drainage recommended, 23—Impeded for want of unanimity of parties, 24, 25—Very much neglected, 132—General drainage bill advised, 53.

E.

Education. The great desire on the part of the people for, 22, 29—Bad system of education now pursued, 29, 104—Education and improved morals tend to good conduct and happiness of the people, 87—In branches of industry strongly recommended, 182—Would not tend to establish the linen manufacture in the south, 115—Want thereof, as applied to manufactures and agriculture, 84—As taught under Mr. Owen's plan at New Lanark, 99, 101—Expenses attendant upon the education of children of the peasantry, 102, 103—Mode of, approved of and recommended, as productive of the most beneficial effects, 103, 104—Roman-catholics great advocates for instructing the people, 168.

See also *Children. Schools.*

Elective Franchise. Multiplication of the, a great cause of distress, *Rep.* 7—Being extended to the Roman-catholics a cause of increase of population, 154.

Embankments. See *Drainage.*

Emigration. Advantages to be derived to Ireland from, *Rep.* 11—Emigration for the unemployed not advised, 119—Taking place from all parts of Ireland, 154—As directed by Government, 168, 169—Memorandum of the terms Government agreed to convey settlers to Canada, and the conditions of granting lands, 169, 170—Government plan of, approved of, 170—Outline of a plan of emigration to Upper Canada, 171, 175—Avidity of the peasantry to emigrate, shown by letters from Fermoy, 178, 179—Committee of persons interested in emigration to become answerable for any funds advanced by Government, 179—Bad character previous to emigration no indication of subsequent conduct, 179—Letter of J. W. Bannister to Mr. Spring Rice on, 199—Plan of emigration as adopted by Mr. Ingram at the Cape, 180.

Employment. General desire of the peasantry for employment, 14, 21, 45, 46, 65, 109, 117, 119, 127, 156, 158, 181—Peasantry prefer employment to gratuity, 19—Great want of employment at Killarney, 21—Migration of the people of Kerry to seek employment elsewhere; causes thereof, 25—Exertions made to find employment for the poor; causes of want of employment, 43—Mode suggested for the employment of the peasantry, 117—Necessity of some plan to be adopted for employing the poor, *Rep.* 5. *Ev.* 130—Duty of the Government to find employment for the people, 157—Manufactures as well as agriculture necessary for the employment of the people, 186—An enlarged means of, would enable the poor to purchase food, 67—Has a visible tendency to improve the morals of the people, *Rep.* 11. *Ev.* 143—Number of population out of, 107, 124, 143, 150, 158, 181—State of the peasantry with reference to, 107.

See also *Canals. Capital. Children. Distress. Disturbance. Females. Fisheries. Peasantry.*

England. The principal market for the produce of the south of Ireland, 164.

English Capital. See *Capital.*

Erris. See *Connemara.*

Example. See *Flax.*

Exchange of Labour. See *Wages.*

Exchequer Bills. Proposed to raise a loan for Ireland by, 149.

Exportation. See *Importation.*

F.

Factory. See *Cahir.*

Failure. See *Currency.*

Farmers. Comparative condition of, now and formerly, 104.

Farming. Bad system of farming, 159—Better system of, adopted in Carlow, 66—A more skilful system recommended, 133.

Farming Societies. Bad faith of the, 184.

Farms. See *Small Farms.*

Females. Advance of small sums would profitably employ females, 69—Desire of the female peasantry to be possessed of better implements, 161—Mode adopted for the relief and employ of, 181, 182.

Fermoy. See *Emigration.*

Fish. Chief support of the peasantry near fisheries, 192.

Fish Curers. Mode adopted for curing fish in Galway, 192—Ought to be distinct from the fishermen, 192.

Fisheries.

Fisheries. Fishing prevented for want of means, 45—Efforts to encourage the fisheries by the loan system, 19—Encouragement given thereto, by the Charity Committees of Dublin and London, 125—Advantage to be derived by encouraging the, *Rep.* 10, *Ev.* 126. 190, 191—Number of men employed therein, 126—Would be benefited by the erection of small harbours, 189—Means adopted by Government to encourage the, 193—Experiments tried with regard to the improvement of the, 193—Advantageous application of capital to the fisheries, and time of repayment, 194—Ignorance of the people as to fishing, 197—Introduction of expert fishermen from other countries as an example to the Irish recommended, 198.

See also *Salt. Scotch Fishery. Tonnage Bounties.*

Fishery Board. Means adopted to encourage the fisheries by the, 193—Their exertions to promote the trade, 193, 194.

Fishing Implements. Bad state of, 192.

Fitzgerald, Right honourable Maurice, M. P. (Analysis of his Evidence).—Want of employment; eager desire to obtain it; mode of paying wages, 158—Bad system of farming; agricultural implements very bad; natural advantages Ireland possesses for the profitable investment of capital; how disturbances checked, 159—South of Ireland well adapted for the linen trade; erection of markets in remote parts advised, 160—Desire of the female peasantry to be possessed of better implements, 161.

[Second Examination.]—Abundance of manure, 188—Want of roads, 188, 189—State of the harbours, 189—Artificial aid necessary for encouraging the fisheries; bad state of the fisheries, 190, 191—Mode of curing fish, 191—Advantages Ireland possesses in curing fish; fish the chief support of the peasantry, 192—Evil of the duty on salt to the fishermen, 192—Means adopted to encourage the fisheries; experiments tried for improvement of the fisheries, 193—Advantageous application of capital to the fisheries, 194.

[Third Examination.]—Gratuitous relief prejudicial; application of a loan to the fisheries, 196—Unnatural state of Ireland compared with England and France; withdrawal of income a great cause of impoverishment; ignorance of the people as to fishing, 197—Manufactures improved by protection to foreigners; advantage of charitable loans, 198—Letter from J. W. Bannister to Mr. Spring Rice, on emigration, 199.

Flax. Defective system of preparing, *Rep.* 10—Improvement in the growth of flax recommended, 15. 47. 60. 61. 120. 184—Process of manufacturing flax, 15—Want of implements for the manufacture thereof, 15, 16. 27. 47—The cultivation not equal to the demand, 60—Growth of flax benefited by an improved system of culture, 100—Growth of flax encouraged in Galway instead of barley, 129—Land well adapted to the cultivation of, 136. 183—Defects in the mode of cultivating flax in Ireland, and the improved method adopted in Scotland and the Netherlands, 137, 138—Anxiety of the Irish for information respecting flax, and difficulties that impede its improved cultivation, 138—Example the best mode to be adopted with reference to the cultivation and manufacturing flax, 184.

Flax Seed. Evils attending the want of, 26—Irish have a prejudice against preserving, 137—Prejudice against the native, 184.

Food. Districts possessing a surplus of, and the inhabitants starving, *Rep.* 4, 5; *Ev.* 67.
See also *Peasantry.*

Foreigners. See *Manufactures.*

Frauds. Practised in the sale of linen in the south, 160.

Freise. See *Clothing.*

Friendly Societies. Recommended, 110.

Fuel. Great want of, in the county of Cork, 117.

Furlong, William. (Analysis of his Evidence).—Difficulty in procuring capital in Connaught and Munster, 55—Difficulty of recovering debts; abuse of the office of sheriff, 54, 55—High rate of interest; great depreciation of property; want of employment a great cause of disturbance, 55—Evils of the subdivision of land; advantages of capital, 56, 57—Distress of the landed interest, 57, 58.

Gentry. See *Resident Gentry.*

Glengall, The Right honourable the Countess of. (Analysis of her Evidence).—Expense of the house of industry at Clonmel; mode adopted for the relief and employment of females; want of employment, and eagerness to procure it; deficiency of implements for spinning, 181—Education in branches of industry recommended; evils from paying wages in account; cutting a canal from Waterford to Limerick advised; mode of employing the females at Cahir, 182—Benefits arising from the factory at Cahir; public markets recommended; land well adapted for the cultivation of flax; ignorance of the people as to the cultivation of flax, 183—Gratuitous relief not found beneficial; prejudice against the native flax seed; bad faith of the farming societies, 184.

3.—Report, 1823—continued.

Grand Jury System. Unseasonable times the grand jury presentments are made, *Rep.* 8
 —Mode of employment under the grand jury system, 27—Amount of assessments per acre in Westmeath, 116—Grand jury presentment system beneficial to the country, 112, 113—A great check upon money raised upon occupiers of the soil, 115—Class of men composing the grand jury, 116—Better conducted in Westmeath than any other county, 116—Formula for obtaining money by grand jury presentments, and benefits to arise therefrom, 185.

Government. See *Employment*. *Loan System*. *Public Works*.

Grattan, Henry, M. P. (Analysis of his Evidence.)—Relief afforded by Mansion-house, Dublin, and London committees; causes of distress, 125—Advantages of encouraging fisheries, 126—Supply of implements to encourage the linen trade, 126, 127—Evils of absenteeism; constitution of the Linen Board, 127—Benefits arising by the introduction of the linen trade into the south of Ireland; in the north tenants pay their rents from linen, not from agriculture; grants by the Board give a stimulus to industry, 128—Facilities for the linen trade greater in some instances in the south than in the north, 129—Desire in the south to procure implements of manufacture; growth of flax encouraged in Galway, 129, 130—Population out of employ, 130—Gratuitous system productive of bad consequences, 131.

Gratuity. See *Employment*.

H.

Harbours. State of them, and increase thereof advised, 189.—See also *Fisheries*.

Herrings. Amount imported from Scotland, 190.

Hibernian Philanthropic Society. Memorial of the provisional committee of the, 200, 201.

Hibernian Schools. See *Clergy*, Roman-catholic.

High Sheriff. See *Sheriff*.

Horton, Robert J. Wilmot, M. P. (Analysis of his Evidence.)—Emigration as directed by Government, 168, 169—Memorandum of the terms Government agreed to convey settlers to Canada, and the conditions of granting lands, 169, 170—Outline of a plan of emigration to Upper Canada, 171–175—Remarks on the province of Upper Canada, 175–178—Colonel Talbot's plan of settlement advised, 178—Avidity of the peasantry to emigrate, 178, 179—Committee of persons interested in emigration to become answerable for any funds advanced by Government, 179—State of convicts transported from Ireland to New South Wales; plan of emigration as adopted by Mr. Ingram at the Cape, 180.

Hours of Labour. Number required for working men under Mr. Owen's plan, 100.

House. See *Rent*.

House of Industry. Expense of the, at Clonmel, greater than the benefit derived from it, 181.

Hyett, William. (Analysis of his Evidence.)—Counties of Ireland in distress, 13—State of the linen manufacture at Clonakilty, 13, 14—General desire of employment, 14, 19—Growth of flax recommended, 15, 16—Appropriation by the London committee to the encouragement of the linen trade; heads of a plan for the encouragement of industry in Ireland, 17—Loan establishments, where situated, 18—Improved system of agriculture advised; efforts to encourage the fisheries, 19—Examination on public roads; indisposition to employ English capital, 20—Railway recommended for conveying coal, 21.

I.

Implements. See *Females*. *Manufacturing Implements*.

Implements of Husbandry. See *Agricultural Implements*.

Implements of Industry. See *Manufacturing Implements*.

Importation and Exportation. Principal export from Ireland to Cadiz and Gibraltar, Vera Cruz and South America, 64.

Industry. Heads of a plan for the encouragement of industry in Ireland, 17.
 See also *Linen Board*.

Infant Schools. Advantages of establishing, 157.

Ingram, Mr. See *Emigration*.

Inspectors of Linen. Great deal of jobbing in their appointment, 183.

Instruction. See *Education*.

Intemperance. See *Infant Schools*.

Interest.

475

3.—Report, 1823—continued.

Interest. Landowners suffer under the high rate of interest, 55.—See also *Banks*.

Ireland. Unnatural state of, compared with England and France, 197.

See also *North of Ireland. Value of Land.*

Irish Linen. See *Linen Manufacture*.

J.

Joint Stock Banks. Examination relative to establishing joint stock banking companies, 163.

Judgments. The difficulty of obtaining money after judgment is obtained, 25.

K.

Killaloe, Bishop of. Letter of Dr. O'Shaughnessy on Irish distress, 32.

Killarney. See *Cotton Manufacture. Employment.*

Kirchhoffer, Rev. Robert. Letter on distress, &c., 42, 43.

L.

Labour. State of, in Waterford and Kilkenny, 105.—Opinion as to the demand for labour, 135.—See also *Charitable Funds. Wages.*

Labourers. See *Peasantry*.

Lanark, New. Evidence upon Mr. Owen's plan as established there, 88, 89, 91, 99.

Land. Subdivision of, a great injury to the proprietor, 56.—Depreciation of landed property, 112.—See also *Small Farms. Value of Land.*

Landlords. Receive little or no rent, and deeply in debt, 121.—Distressed condition of the, 122.—Heavy expenses the landowners are saddled with, 152.

See also *Capital. Population. Resident Gentry.*

Large Farms. See *Small Farms*.

Leases. Check against improving property by the mode of leasing it, 153.

Limerick, Bishop of. Letters relative to distress, and means of relief, 34-37.

Limerick. See *Waterford Canal*.

Linen Board. Operation of the Linen Board, 48.—The duties of a trustee of the, 113.—Individuals constituting the Linen Board principally noblemen, 127.—Difficulty of procuring attendance at the, 127.—Appointments to the Board considered Government appointments, 127.—Undue influence of the Linen Board in a certain case, 128.—Supposed desire of the Linen Board to confine the trade to the north of Ireland, 128.—Grants by the Board give a stimulus to the industry of the people, 128.—To what manufactures their attention should be directed, 187.—Introduction thereof into the south established through the aid of the Linen Board, 138.—The Board pay little or no attention to it in the south, 184.

See also *Manufacturing Implements*.

Linen Manufacture. During the distress, persons employed in the linen trade sought no relief, *Rep.* 5, 6.—State of the linen manufacture at Clonakilty, 13, 14, 24, 47, 50.—Description of the; amount of the sales thereof, 46, 58.—Increased demand for Irish linen, 50.—Deficiency of capital in the linen trade, 51.—Premiums for the best webs a great encouragement to improvement of manufacture, 60.—General examination on the linen trade, 61-64, 113, 114.—Introduction of linen and woollen manufacture would be a great advantage to the poor, 68.—Linen trade tends to benefit the habits of the people, 65.—Distribution of implements a means of extending the, 113, 126, 127.—Encouragement given thereto, by the London and Dublin Charity Committees, 17, 125.—Different prices paid for wheels in certain parts of Ireland, 127.—Extension of the, in the south and west advised, *Rep.* 10.—Benefits arising by the introduction of the linen trade into the south of Ireland, 128, 129, 138, 187.—Facilities for the linen trade greater in some instances in the south than in the north, 129, 160.

Lismore, Lord. Wages paid on his estates, 140.

Loan System. Loan system by Government recommended, 68, 111.—Manner in which loans should be applied, 112.—Only to apply to resident landlords, 149.—Proposed mode of raising a loan for the landed proprietors, 156.

See also *Fisheries. Security.*

London Committee. Sums distributed through the, for the relief of Ireland, *Rep.* 4.—The amount of money at the disposition of the London Committee, 30.—Balance remaining in their hands, 34.—Address of the British Committee to the peasantry of the distressed districts, 33.—The assistance they rendered to the fisheries, 193.

See also *Charitable Societies. Linen Manufacture.*

Lower Orders. See *Peasantry*.

3.—Report, 1823—continued.

M.

Machinery. Tendency of using machinery in agriculture, 146—Mr. Owen's calculations relative to, 195.—See also *Agriculture. Flax.*

Mahony, Peirce. (Analysis of his Evidence.)—Great want of employment at Killarney; cotton manufacture established there, 21—Rate of wages; amount of rent and outgoings; tithe on new made land vexatious; system of agriculture adopted, 22—Improved system of drainage recommended; mode of carrying manure; bad state of the roads, 23—Description of the mountain and bog land in the county of Kerry; increase of linen manufacture at Clonakilty, 24—Difficulty of extinguishing communal rights; migration of the people of Kerry to seek employment; aversion to embark English capital, 25—Laws of debtor and creditor; clothing of the peasantry, 26—System of labour; mode of employment under the grand jury system, 27—Establishment of schools, 28, 29—Bad system of education; amount paid by Kerry county to absentees, 29.

Manchester. Experiment as tried by Mr. Owen's plan in the neighbourhood of, 87, 88.

Manufactures. Introduction of, in the southern provinces, of great use, 114, 142—Establishing, recommended as a relief to the agricultural interest, 133—Premiums advised to be given for the establishment of manufactories throughout Ireland, 186—Combination of agriculture and manufacture tend to improve the condition of the country, 134—State of manufacturing establishments in the north of Ireland compared with those in Scotland, 143—Opinion that our manufactures have been greatly improved by protection to persecuted foreigners, 198—Mr. Owen's calculation relative to, 194.

Manufacturing Implements. Want of manufacturing implements; counties to which it applies, *Rep.* 8, *Ev.* 15, 16, 27, 34, 120—Deficiency of implements for spinning, 181—Great desire among the poor to procure, 120, 129—Price of them; they are sometimes borrowed, 120—Desire of the female peasantry to procure, 181—Provision thereof of great importance to the people, 66—Trustees of the Linen Board distribute, as they think proper, 113—Pride the peasantry take in implements of industry, 129—Gentry have not the means of supplying the peasantry with implements of manufacture, 129—Principle of payment for implements preferred to gratuity by the peasantry, 130.

Mansion-house, Dublin, Committee. See *Charitable Societies.*

Manure. Mode of carrying manure, 23, 188.

Markets. Population in the habit of resorting to, for their supply, 108—Very much wanted for the sale of yarn, 114—Erection of, in remote parts advised, 160—Public markets recommended as beneficial to the manufacturer and agriculturist, 183—For increased consumption under Mr. Owen's plan, 86.—See also *Linen Manufactures.*

Marriages. See *Clergy, Roman-catholic. Population.*

Mayo. No disturbance has arisen therein, there being employment in manufactures, *Rep.* 6.

Middlemen. Evils to be apprehended from, 105—Made the best tenants when they had capital, 151.

Migration. See *Employment.*

Money. See *Currency. Wages.*

Mortgage. Difficulties thrown in the way of mortgaging property, 49.

Mountain and Bog Land. Description of the mountain and bog land in the county of Kerry, 24.

N.

Newport, Sir John, M. P. (Analysis of his Evidence.)—School of agriculture established at Banno, 103, 104—Bad system of education generally in Ireland, 104—State of labour in Waterford and Kilkenny; evils to be apprehended from the middlemen, 105—Distress attributed to the diminished value of produce, 105, 106—Failure of the banks tended to prevent employment, 106, 107.

North of Ireland. Better condition of the north compared with the south of Ireland, 84—Improvements of the, attributed to the employment of the people, 115.

Notes. See *Currency. Bank Notes.*

O.

Oldham, Thomas. (Analysis of his Evidence.)—Increase of the linen trade, 58—Regulations of the linen market, 59—Encouraging the growth of flax recommended, 60, 61—Want of bleaching greens; general examination on the linen trade, 61-64.

Owen,

3.—Report, 1823—continued.

Owen, Robert. (Analysis of his Evidence)—Cause of distress, 70—Improved method of employment and education recommended; rules and regulations of a community, 71–83—Government loans to the poor recommended; want of employment; better condition of the north of Ireland compared with the south; rude state of agriculture, 84—Proposed establishment of villages, 85, 86—Advantage of education and improved morals, 87—Improving the condition of the poor does not increase population, 90.

[Second Examination.]—Evidence as to English capital being applied to the relief of Ireland, 92, 96—Village establishments, 93, 97—The amount of capital necessary to employ the destitute peasantry in Ireland, 94, 96—High rate of wages advantageous, 97—Opening new roads beneficial; benefit of increased production under Mr. Owen's plan, 98—Examination relative to general produce and consumption, 99—Public averse to embark capital without practical demonstration of success in their undertaking; growth of flax benefited by an improved system of culture, 100—System of education as adopted by Mr. Owen at Lanark, 101—Expenses attendant upon education, 102, 103.

[Third Examination.]—General distress; desire to procure employment; proposed mode of raising a loan; benefits to be derived from capital, 156—Duty of the Government to provide employment for the people; establishing infant schools, and checking intemperance advised, 157—Diffusing Mr. Owen's plan generally would be very beneficial, 158.

Owen's Plan. Consideration of, as applicable to Ireland, *Rep.* 9, 10—Rules and regulations of a community, 71–83—Advantages to be derived therefrom, 98, 158—Examination relative to Mr. Owen's calculations, 194–196—Not entirely free from contingencies to which society is exposed, 196.

P.

Paper Currency. See *Currency*.

Parliamentary Influence. See *Population*. *Small Farms*.

Pasture Land. Now most profitable, 122.

Patterson, James. Letter of, concerning the fisheries, 161.

Paunceforte, Robert. (Analysis of his Evidence.)—The amount of money at the disposition of the London committee; proposed mode of relief for Ireland, 30—Balance remaining in their hands, and how applied, 34—Cause of distress; mode adapted to relieve the same; where most prevalent, 31—Agency employed for relief; system of support adopted, 32—Address of the British committee to the peasantry of the distressed districts, 33—Great want of manufacturing implements, 34—Letters relative to distress, and means of relief, 34–43—Exertions made to find employment for the poor; causes of want of employment, 43—Charitable loans advantageous; gratuitous system opposed, 44—Fishing prevented for want of means, 45.

Peasantry. Their miserable and destitute condition, *Rep.* 5, 6; *Ev.* 70, 139—Evidence on the food, clothing and population of the peasantry of Ireland, 95—Poverty of the landlords cause of distress to the labouring population, 108—Very high opinion entertained of them, 110—Benevolence of the lower orders of Irish, 123—One half of the labouring population unemployed, 133—Unemployed labourers easily made the dupes of others, 150—How to improve the moral condition of the people, 155—Money to be applied by the landowners to the positive work of the peasantry, 157.

See also *Distress*. *Disturbance*. *Employment*. *Fish*. *Rent*.

Piers. Construction and repair of, in Clare, Galway and Mayo, 125—Usefulness of, to vessels in distress, 190.

Population. Vast increase of, since 1695, *Rep.* 7—Evidence relative to the increase of, 28, 121, 123, 154—Causes to which the increase is attributed, 121, 154—Effect of redundant population, 50—Improving the condition of the poor does not increase population, 90—State of, in Westmeath, 107—Early marriages a great cause of, 121—Encouraged by landlords with a view to parliamentary influence, 121—Better habitations for the peasantry have a tendency to check population, 121.

See also *Clergy*, *Roman-catholic*. *Peasantry*. *Small Farms*.

Potatoe Crop. Very variable and uncertain, *Rep.* 5; *Ev.* 139—Failure thereof cause of distress, 13, 45, 50, 125—Peasant depends upon his garden for the supply of, 108—Potatoes are the chief food of the Irish peasantry, 139—They are used extensively in feeding pigs, 189.

Potatoe Garden. See *Rent*.

Pottery. See *Clay*.

Price of Goods. Want of steadiness in the price of goods a great evil, 115.

Prices. Higher in Scotland than Ireland, 194.—See also *Linen Manufacture*.

Private Banks. See *Currency*.

3.—Report, 1823—continued.

Produce. Distress attributed to the diminished value of produce, 105, 106—Large farms increase the quality of produce, 136.—See also *Consumption*.

Profit. Derived by the value of labour, 51.—See also *Agriculture*.

Property. Great depreciation of, 55.

Provincial Banks. See *Banks*.

Provisions. Average prices of potatoes and oatmeal, 107.

Public Works. Ready money payments recommended for, *Rep.* 8—Erection of piers and harbours recommended, *Rep.* 10—Produce no important benefit to the district in which they take place, 97—Employment of the peasantry therein, 125—Government refuse to lend money except on, 111—Money cannot be received till public works are executed, 116—Magistrates careful of investigating the necessity of public works, 116—Grant for, in the county of Westmeath, 116—Advancement of money on, not so beneficial as assistance to the landed interest, 156.

R.

Railway. See *Coal*.

Reels. See *Linen Manufacture*.

Relief. Proposed mode of relief for Ireland, 30—Agency employed for relief, 32—System of support adopted, 32.

Rent. Rent and outgoings for the house and potatoe garden of the peasantry, 22—Amount of, very different in certain situations, 106, 107—Tenants pay their rents in the north from linen, not from agriculture, 128—Great abatement of, 121—Disturbance attributed to high rents, 151—Instances of the landlord being left without any rent, 152—Since 1810 occupants would have offered any rents for certain lands, 152—Mr. Owen's calculation relative to, 196.

Repairs. Expenses of, generally fall on tenants, 121. 152.

Resident Gentry. The county of Carlow well circumstanced in that respect, 69—Means very much reduced, 105—Resident landlords tend to the prosperity of the people, 148. See also *Landlords*. *Loans*.

Rippling Comb. Used in Scotland for manufacturing flax, 137.

Roads. Examination on public roads; inconvenience attending the badness thereof, 20. 23. 188, 189—Districts improved by making roads, as tending to civilization, 52—New roads beneficial to the population, 98. 189—Peasantry residing on the land through which roads run employed in making them, 116.

Roche, James. (Analysis of his Evidence.)—Withdrawal of notes by the failure of private banks, 161—Different mode of conducting business owing to the alteration in the currency; disadvantages arising from the sale of corn at certain periods, 162—Examination relative to joint stock banks, 163—Opinion relative to the value of bank notes; England the principal market for the produce of the south, 164—Want of capital, 164—Abuse of the office of sheriff, 164, 165—Circulation of notes, 165—Difficulties in the way of obtaining Bank of Ireland paper, 166—School of agriculture recommended, 167—Catholics great advocates for instruction, 168.

Rolling Mills. Very essential to the manufacturing of flax, 138.

Roman-catholic. See *Education*.

Roman-catholic Clergy. See *Clergy*.

S.

Salt. A cheap supply conducive to the benefit of the fisheries, 126—Increase in price when herrings are plentiful, 190—Depôts of salt necessary to the fishing trade, 192—Evil of the duty on, to the fishermen, 192.

Savings Bank. Introduced in Cork with advantage, 167.

Schools. The school at Cork founded by the Roman-catholic bishop, 167—The establishment thereof would better the condition of the poor, 28.—See also *Bible*.

School of Agriculture. Particulars as to that established at Banno, 103—Establishment of, recommended, 28, 29. 46. 167.

Schools of Industry. Recommended, as diffusing improved habits among the people, *Rep.* 9.

Scotch Banks. Establishment of banks upon the Scotch system recommended, 188.

Scotch Farming. Has been introduced with great advantage about Fermoy, 123.

Scotch Fishery. The benefit conferred by a Dutch prisoner of war in the improvement of, 198.

Scotland.

479

3.—Report, 1823—continued.

Scotland. See *Value of Land*.

Scotch Mills. The want thereof for the linen manufacture, *Rep.* 10; *Ev.* 47—Introduction thereof productive of benefit, 28. 137.

Sealing Goods. A great protection to the trade, 64.

Seal Master. Duties of the office of, 59, 60.

Security. Country gentlemen would become securities for loans advanced by Government, 111.

Seymour, Rev. Charles. His letter to the Archbishop of Tuam upon distress, 31.

Sheriff. Gross abuse of the office, 25, 26. 49. 54, 55. 164, 165—Duty of the, and mode of performing the same, 110, 111—High sheriff responsible for the sub-sheriffs, 165.

Sleive Graive Mountains. See *Commonal Rights*.

Small Farms. Subdivision of land a cause of present distress, *Rep.* 7; *Ev.* 53. 132—Land is let into, for the purpose of obtaining Parliamentary influence, 119—Interest of the landlord to consolidate small farms into large, 119—Advantages large farms have over small, 134. 154—Consolidating small farms into large throw the people out of employ, 119—With capital, large farms employ more labour than small, 122—System pursued to check population on small farms, 151.—See also *Land*.

Soil. Quality of, in Ireland far superior to England, 135.

Soup. Soup establishments founded to relieve the distress, 32.

South of Ireland. See *Employment*. *Linen Manufacture*. *North of Ireland*.

Spade Husbandry. Advantageous on moist soils, 195.

Specialities. Sheriffs generally decline granting them, 54—Sheriff grants them for the recovery of small debts, 110.

Speculation. Facilitated by easy credit from the banks, 106.

Spinning. See *Manufacturing Implements*.

Strickland, Mrs. Letter on affording industrious occupation to the people, 40, 41, 42.

Sub-Sheriff. See *Sheriff*.

T.

Talbot, Colonel. His plan of settlement advised, 178.

Task Work. Over employment thereat prejudicial to health, 46—Disadvantageous to master and man, 109—Beneficial to the character of the peasant, 118—Many instances of their exertion exceeding their strength in, 119.

Tenures. Alteration lately made, 29.

Tighe, Robert Sterne. (Analysis of his Evidence.)—State of the peasantry, with reference to employment, in Westmeath, 107—Causes of distress, 108—Desire for employment; rate of wages, 109—System of gratuitous relief deprecated; want of capital; friendly societies recommended; disturbance a bar to the investment of capital, 110—Mode of recovering debts, 110—Mode of paying labourers; loans by Government advised, 111—Want of capital; depreciation of landed property; grand jury presentment system beneficial, 112, 113.

[Second Examination.]—Examination on the linen trade generally, 113, 114—To what disturbances attributed, 114—Advance of money recommended; advantages of the introduction of manufactures in the southern provinces, 114—Want of steadiness in the price of goods a great evil; to what improvement of the north attributed; expenditure of charitable funds, 115—Expenditure on public works, 116.

Tillage System. Very much extended during the war, 122—Not so much land tilled as during the war, 123.

Timber. Is the principal expense in the houses of the lower orders, 120—Purchase no foreign timber, 120.

Tithe. Tithe on new made land considered vexatious, 22.

Tonnage Bounties. System extremely mischievous, 192, 193.

Trench, Dr. Letters on the state of the poor in Galway, 38.

Trustee. See *Linen Board*.

Tuam, Archbishop of. His opinion of the causes of distress, 31.

U.

Uncultivated Districts. Proposed that the unemployed should settle in, 120.

4.—Reports, 1830.

V.

Value of Land. Difference of value between Scotch and Irish property, 49.

Village System. Proposed establishment of villages in the unemployed districts, with manufactories at a convenient distance, 85—Mode of payment for the same, 86—Industry of the inhabitants to form a common fund for the benefit of the village, 86—Evidence as to the general working of village establishments, 93—Amount of money necessary to establish a village, 97.

W.

Wages. Rate of: Generally, 109. 117. 133. 150—At Carlow, 65—At Killarney, 22—In the linen trade, 46, 47—Rate of, lower than during the war, 59—High rate of, advantageous to population, 97—Higher at Waterford than in any other place, 105—Examination relative to the rate of, as compared to England and Scotland, 136. 140, 141—Lowness of wages, *Rep.* 6; *Ev.* 45. 119—New mode of paying for labour recommended, 51—Mode of paying them, 109. 111. 158—In Carlow, 66, 67—In Mayo, 45—Mode of paying labourers very unsatisfactory to the labourer, 153—Practice of generally exchanging labour for commodities, 27. 50—System of paying wages in account, as described by Mr. Nimmo, *Rep.* 8—Are almost always paid in account, 182—Advantages derived by paying the labourers in money, 121, 122—More labour produced by payment in money than in account, 27. 118. 159—Evils to the peasant from paying wages in account, 182—Payment of, in account, a bar to industry in the labourers, as exciting suspicion in the labourer's mind, 140.—See also *Barter*.

War. See *Tillage System*.

Waterford. Prevailing tranquillity ascribed to the employment of the people, 105.

Waterford Canal. Cutting a canal from Waterford to Limerick advised, as giving employment to the poor of the south, 182.

Webs. See *Linen Manufacture*.

Westmeath. See *Public Works*.

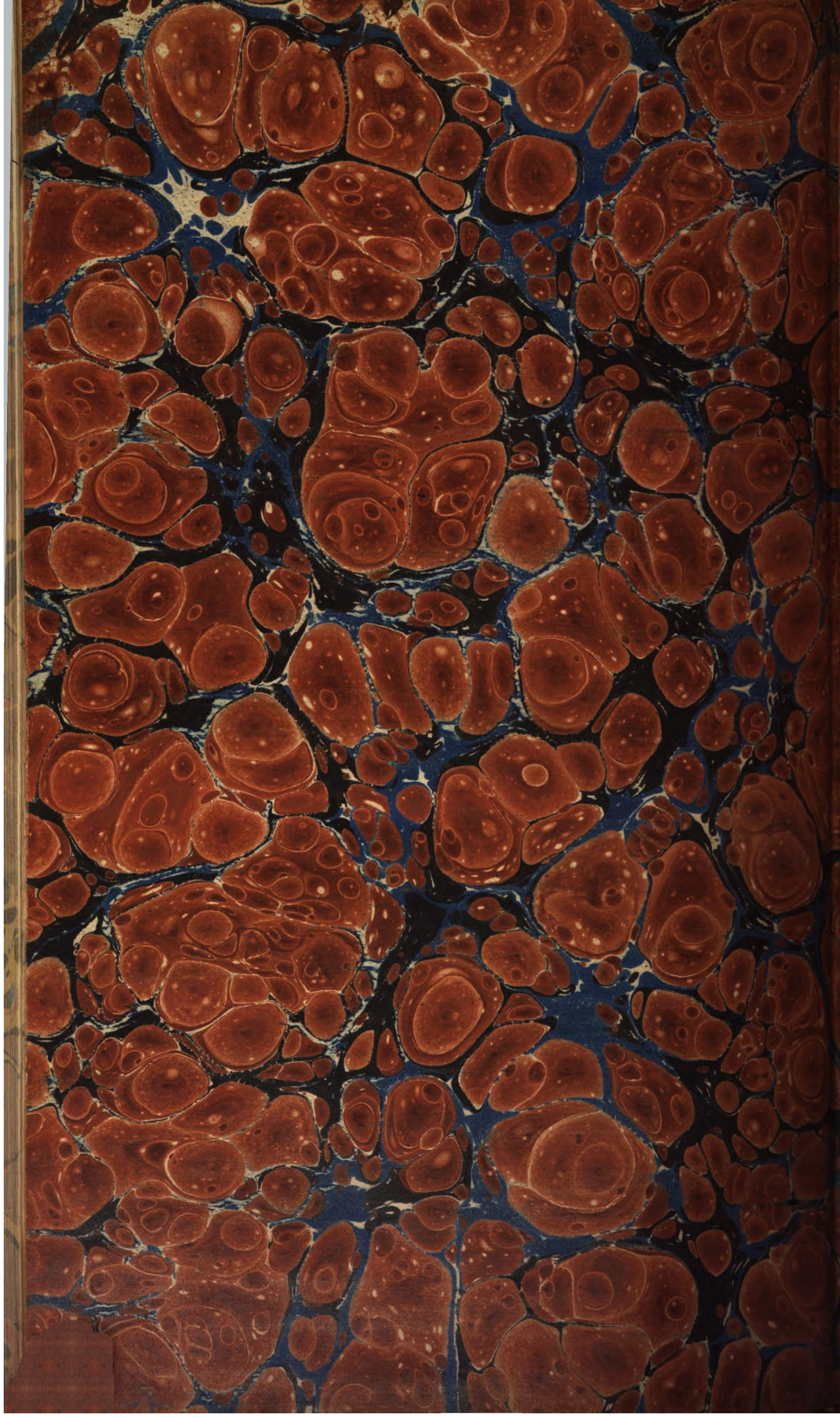
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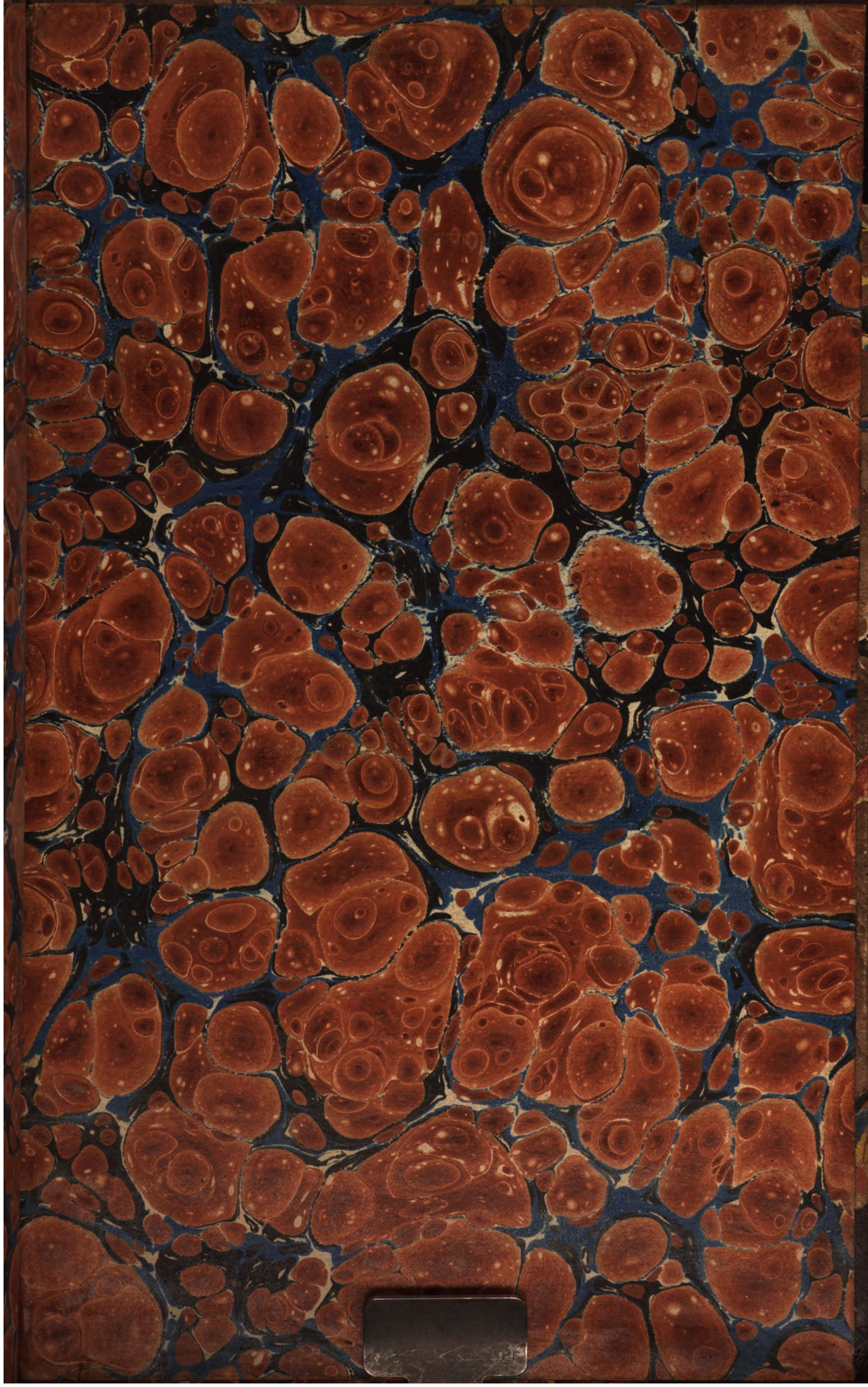
Woollen. See *Linen Manufacture*.

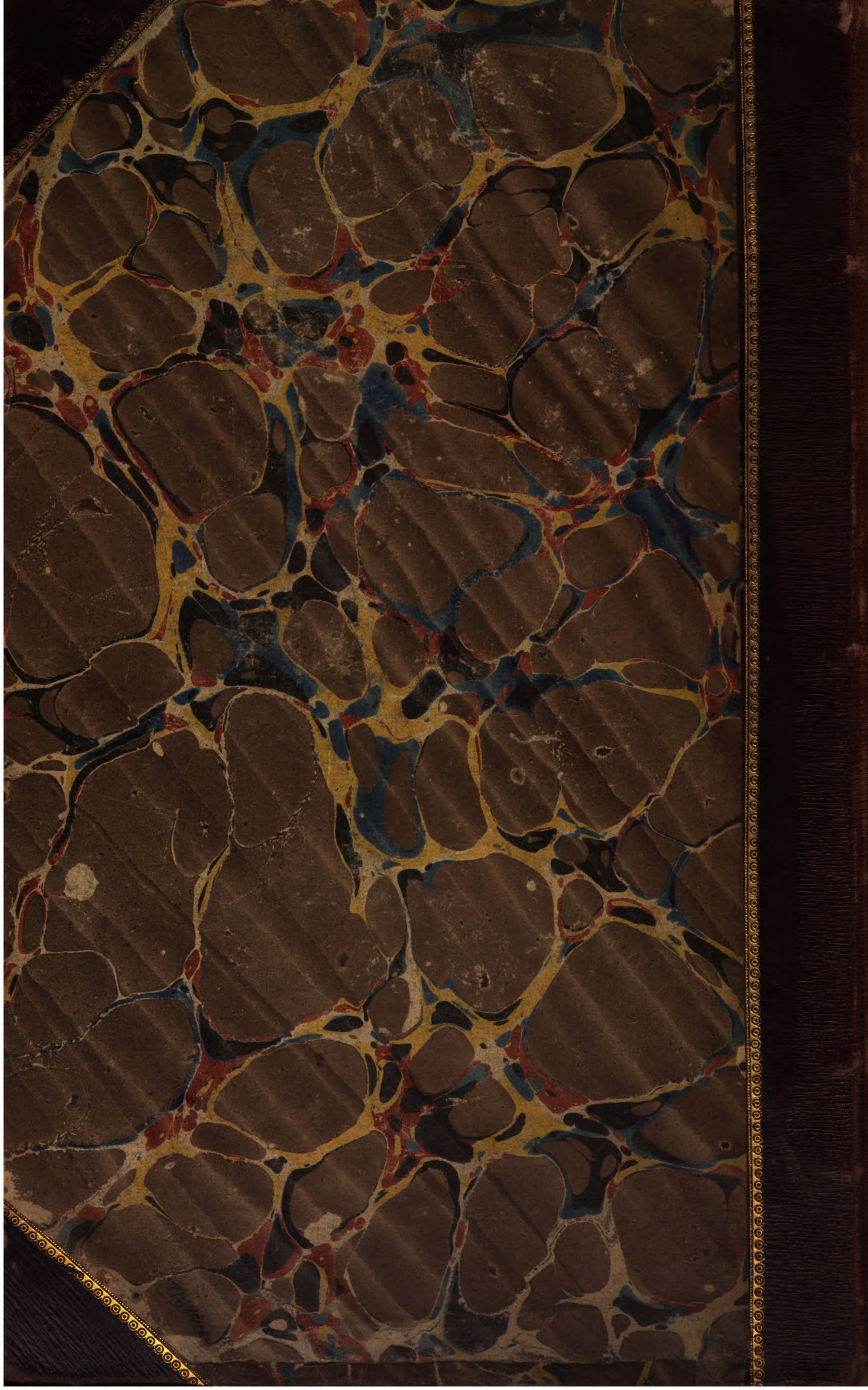
Works. See *Public Works*.

Y.

Yarn. Sudden fall in the price of, 114.







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